| DATE IN | SUSPENSE | ENGINEER | LOGGED IN | TYPE | APP NO. |
|---|---|---|---|---|---|
| 03/04/16 | 03/07/16 | PRG | 03/07/16 | SWD | pPRG1615235401 |

ABOVE THIS LINE FOR DIVISION USE ONLY

Class I

**NEW MEXICO OIL CONSERVATION DIVISION**
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

Assigned API
30-045-35747

# ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

**[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**
**[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**
**[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**
**[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**
**[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**
**[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Amended Application — Notice Provided in Original Application PMAM 1600432778 [Included in this package BJ]

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify Class I Non-hazardous Injection Well

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

**Note: Statement must be completed by an individual with managerial and/or supervisory capacity.**

| Bruce D. Davis | Bruce D. Davis | Director | 3-2-16 |
|---|---|---|---|
| Print or Type Name | Signature | Title | Date |

bruce.davis@WNR.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

**Oil Conservation Division**
**1220 South St. Francis Dr.**
**Santa Fe, New Mexico 87505**

FORM C-108
Revised June 10, 2003

## APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___X___Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: Western Refining Southwest, Inc. [248440] - Western Refining Southwest LP / Transporter
(OGRID # 267595)

ADDRESS: #50 County Road 4990 (PO Box 159), Bloomfield, NM 87413

CONTACT PARTY: Ron Weaver PHONE: 505-632-8013

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ___X___No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Bruce D. Davis TITLE: Director

SIGNATURE: B D R DATE: 3-2-16

E-MAIL ADDRESS: bruce.davis@WNR.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

*Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose.* Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days *from the date this application was mailed to them.*

Side 1

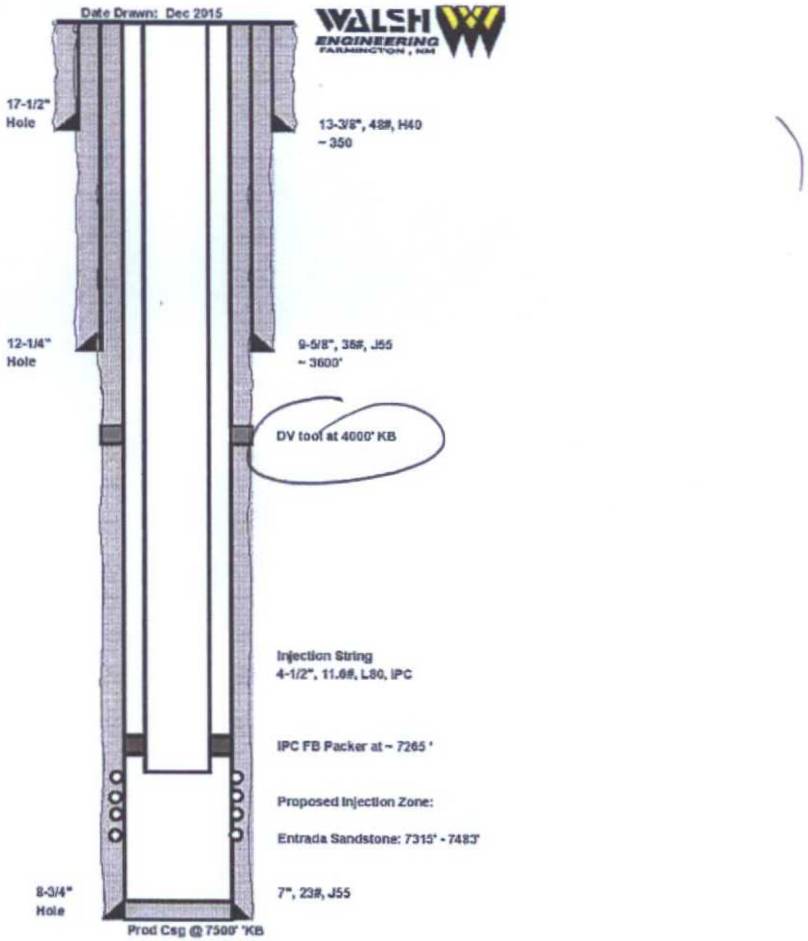
# INJECTION WELL DATA SHEET

OPERATOR: Western Refining Southwest, Inc.

WELL NAME & NUMBER: Waste Disposal Well (WDW) #2

WELL LOCATION: 2028' FNL & 111' FEL (FOOTAGE LOCATION) | H (UNIT LETTER) | 27 (SECTION) | T29N (TOWNSHIP) | R11W (RANGE)

## *WELLBORE SCHEMATIC*




## *WELL CONSTRUCTION DATA*

### Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8, 48 ppf, H40

Cemented with: 394 sx. *or* 548 $ft^3$

Top of Cement: Surface Method Determined: _____

### Intermediate Casing

Hole Size: 12-1/4" Casing Size: 9-5/8", 36#, J55

Cemented with: 857 sx *or* 1693 $ft^3$

Top of Cement: Surface Method Determined: _____

### Production Casing

Hole Size: 8-3/4" Casing Size: 7", 26 ppf, L80

Cemented with: 868 sx. *or* 1692 $ft^3$

Top of Cement: Surface Method Determined: _____

Total Depth: ~ 7500'

### Injection Interval (Proposed)

7315' feet to 7483' (perforated 4 spf)

(Perforated or Open Hole; indicate which)

Side 2

## INJECTION WELL DATA SHEET

Tubing Size: 4-1/2", 10.5 ppf Lining Material: Plastic Lined

Type of Packer: 7" Baker "FAB-1" (or similar model"

Packer Setting Depth: ~ 7265'

Other Type of Tubing/Casing Seal (if applicable): Baker Model "KBH-22" Anchor tubing seal assembly, landed in packer

Additional Data

1. Is this a new well drilled for injection? X Yes _____ No

   If no, for what purpose was the well originally drilled? _____

2. Name of the Injection Formation: Entrada

3. Name of Field or Pool (if applicable): _____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Pictured Cliffs, Chacra, Mesaverde, Gallup, Dakota

# Western Refining Southwest, Inc.

## Waste Disposal Well (WDW) #2

C-108 Data Sheet

V. Maps identifying all wells within 2 ½ miles of proposed injection well and Area of Review (AOR) of 1-mile radius.

The maps are below.

VI. Tabulation of data of all wells of public record within the AOR which penetrate the proposed injection zone.

The only well that penetrates the proposed injection zone is the Ashcroft SWD #1 (API# 30-045-30788) located approximately 3/4 miles to the east. The Ashcroft is a SWD well operated by XTO Energy Resources and is completed in the Entrada and Bluff formations. Noticed

Tabulation of wells within the 1-mile AOR is below.

VII. Operation Data

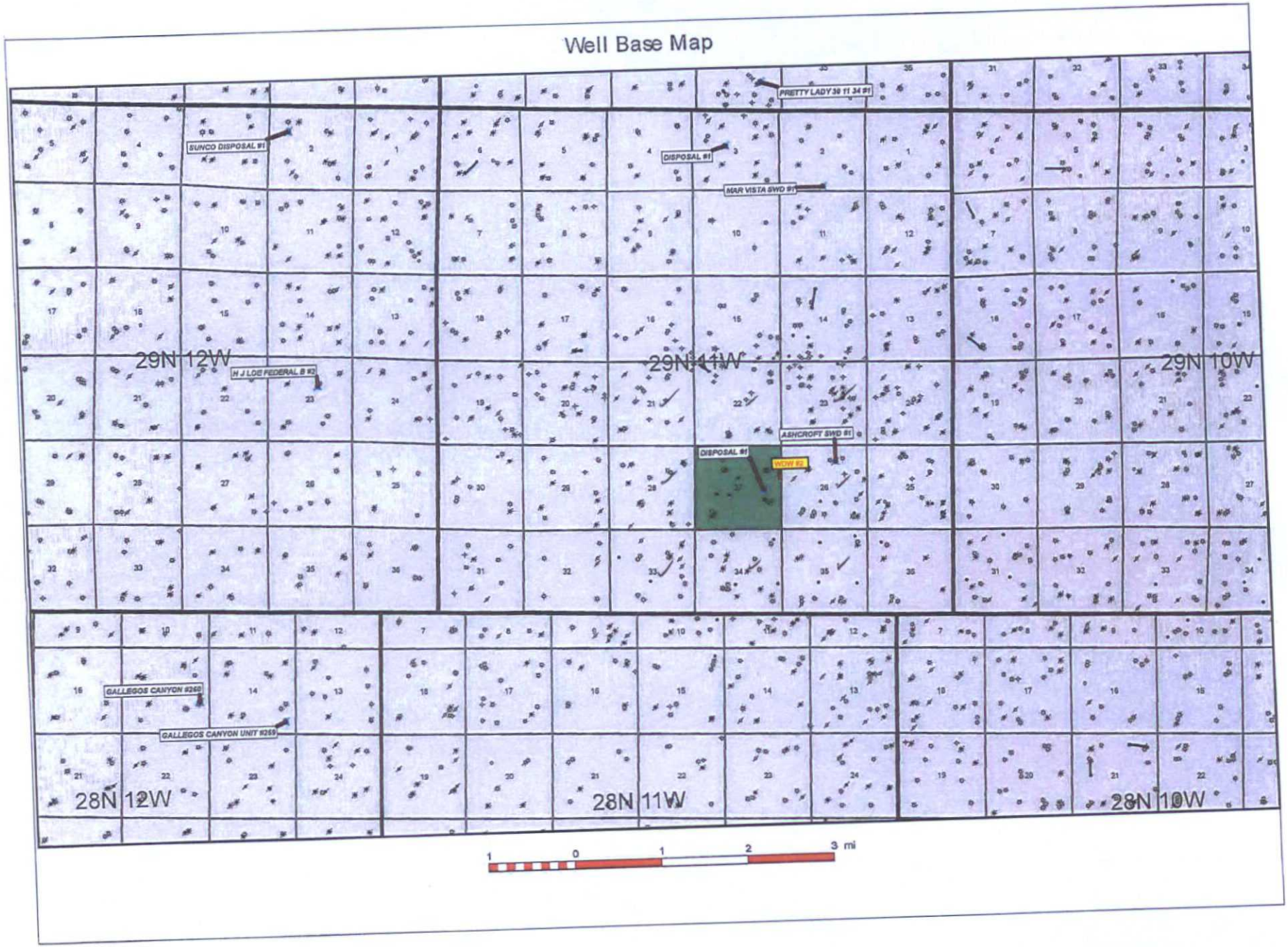
1. A. Average Daily Injection Rate = 3,500 bbls.
   B. Maximum Daily Injection Rate = 8,500 bbls.

2. The system is closed (water will be collected onsite as part of the Bloomfield Terminal's process and pumped over to the injection well).

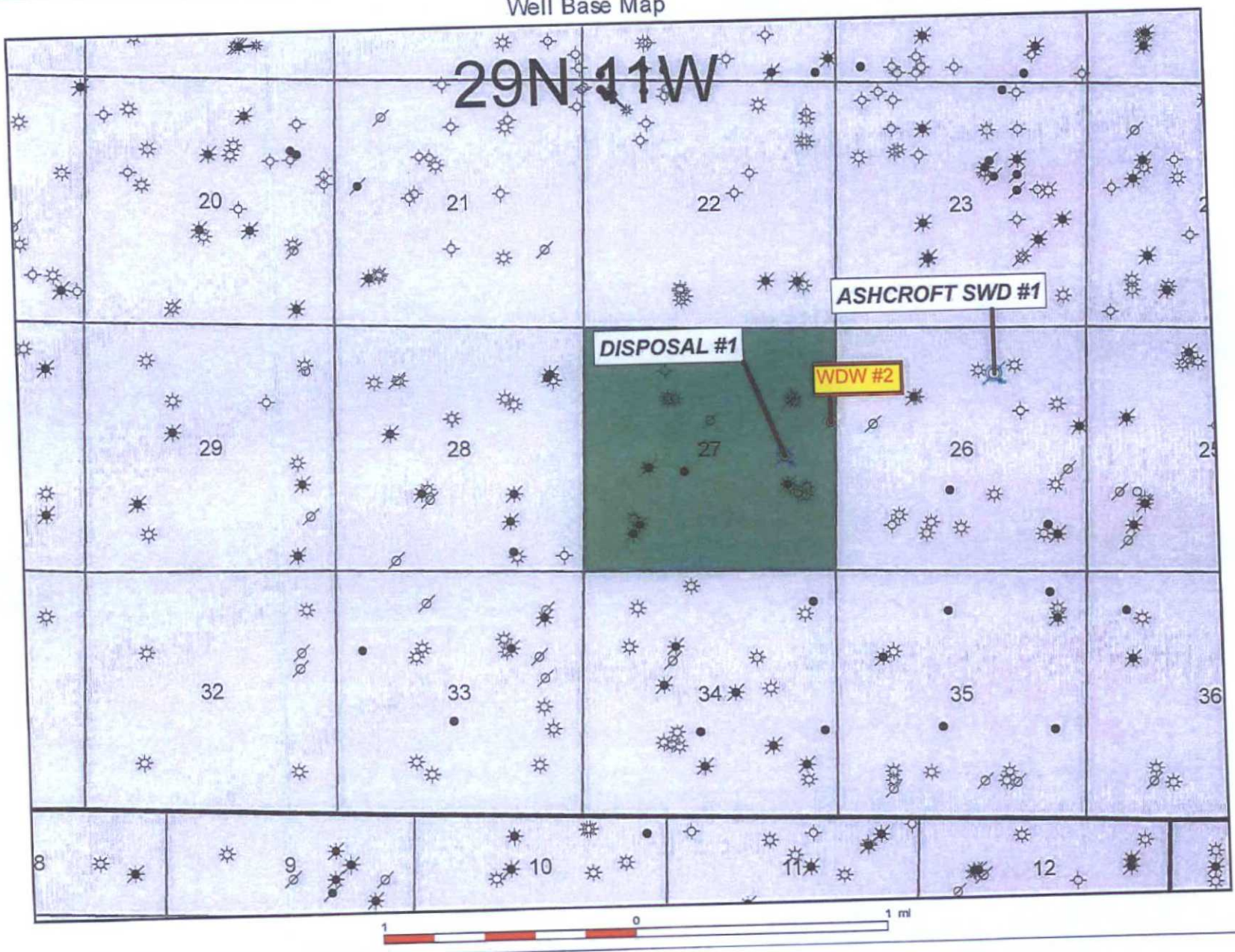
3. Proposed pressures
   A. The average and maximum injection pressures will be determined from a step rate test run after the well is completed. The anticipated injection pressures are ~ 2000 psi.

4. The fluid to be disposed in the proposed injection well will be Waste Water Treatment System effluent, Evaporation Ponds contact storm water and Injection Well Stimulation and Maintenance fluids. Table 1 contains information about the injection fluid including source, waste type, frequency and discharge volume. Table 2 contains information about the sources on Waste Water Treatment Plant influent. An Analytical Summary of the fluids disposed in Disposal #1 2014 Annual report is presented in Table 3. This summary best characterizes the fluid to be disposed.

# Well Base Map

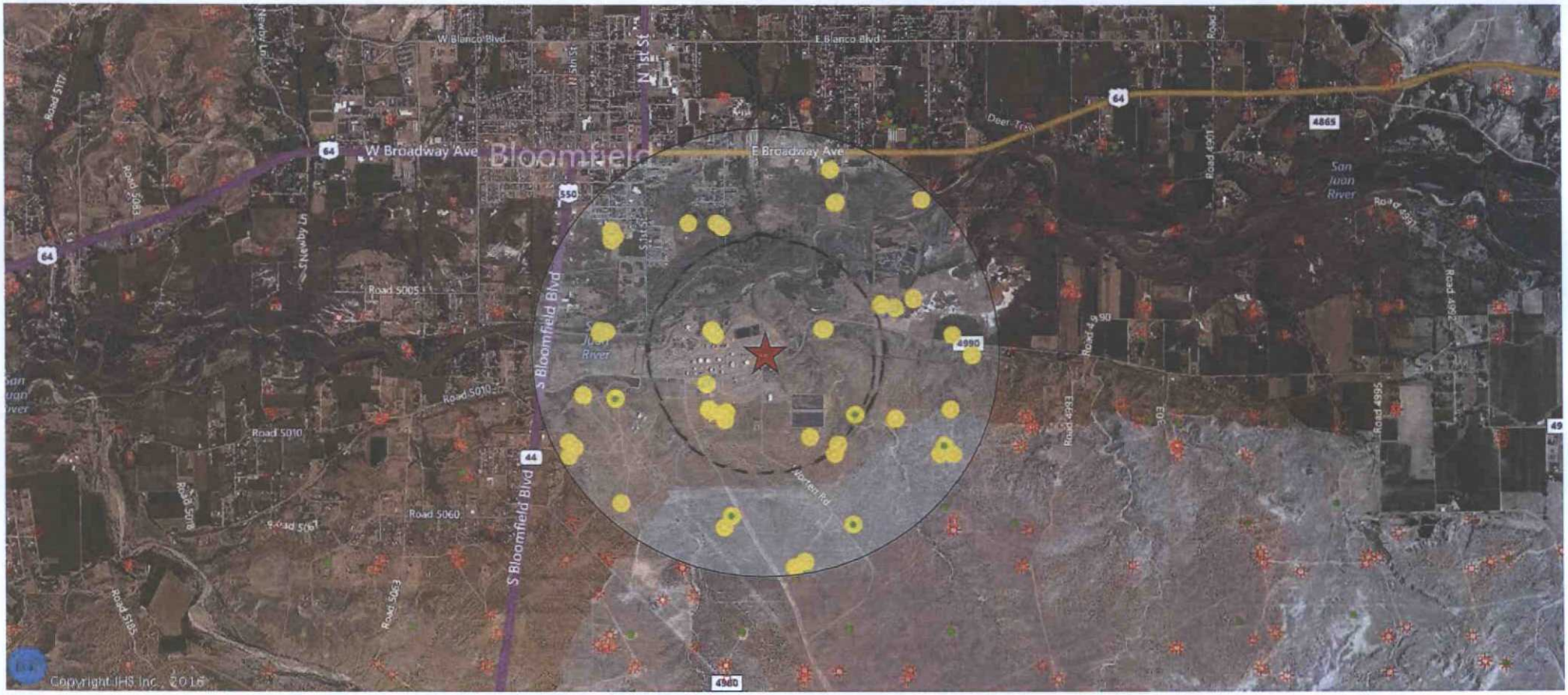


Well Base Map



# Western Refining Southwest Inc.

## Area of Review 1 mile radius




◌ ½-mile AOR – Penetrating Wells – 0

1-mile AOR – Penetrating Wells – 1

Enerdeq Browser Date: Jan 29, 2016 Author: JOHN THOMPSON

Data Not Reviewed By Applicant - redundant well count

DHC & plugged zones - not edited

P&A wells not included - attached OCD compiled list

SWD-812 Entrada
SWD-812-A Morrison & Entrada
SWD-812 B Bluff & Entrada

Western Refining Southwest, Inc.
Bloomfield Terminal
Waste Disposal Well (WDW) #2
Well List for 1-Mile Area of Review (AOR)

Proposed Top of Interval 7315'

| Map Symbol | Production ID | Primary API | Lease Name | Well Num | Operator Name | Location | Latitude | Longitude | Field Name | County Name | Status Name | Prod Zone Name | Lease Code | Oil Cum | Gas Cum | Wtr Cum | TD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | 1300430452519502290 | 30045251950000 | CALVIN | 2 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26P NW SE SE | 36.69244745 | -107.9548384 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006883 | 56,157 | 714,731 | 1,291 | 5,950 |
| O | 1300430452561202290 | 30045256120000 | CALVIN | 3 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26K SE NE SW | 36.69445794 | -107.9618893 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006883 | 65,478 | 602,470 | 1,472 | 5,970 |
| O | 1300430452565702290 | 30045256570000 | CONGRESS | 16 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 34A C NE NE | 36.68790014 | -107.9716743 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006918 | 36,820 | 464,380 | 1,283 | 6,200 |
| O | 1300430452567302290 | 30045256730000 | CONGRESS | 18 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27K NW NE SW | 36.69549308 | -107.9808835 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006918 | 63,095 | 318,931 | 1,964 | 6,150 |
| O | 1300430452567302290 | 30045256730001 | CONGRESS | 18 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27K NW NE SW | 36.69549308 | -107.9808835 | FULCHER KUTZ | SAN JUAN | ACTIVE | PICTURED CLIFFS | | | 95,178 | 2,056 | |
| O | 1300430452567502290 | 30045256750000 | CONGRESS | 15 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 35C SE NE NW | 36.6874019 | -107.9620229 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 006918 | 7,534 | 255,800 | 1,172 | 6,030 |
| I | 1300430452900296160 | 30045290020000 | DISPOSAL | 1 | SAN JUAN REFINING COMPANY | 29N 11W 27I NW NE SE | 36.69640689 | -107.9736785 | SWD | SAN JUAN | ACTIVE | MESAVERDE | | | | | |
| I | 1300430459078890161 | 30045907880000 | ASHCROFT SWD | 1 | XTO ENERGY INCORPORATED | 29N 11W 26B SW NW NE | 36.70129353 | -107.9586722 | SWD | SAN JUAN | ACTIVE | MORROW | | | | | |
| G | 1300430450778371599 | 30045077730000 | SULLIVAN GAS COM D | 1 | XTO ENERGY INCORPORATED | 29N 11W 26B SW NW NE | 36.70149705 | -107.9598182 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 022839 | 22,497 | 2,820,296 | 4,546 | 6,260 |
| G | 1300430450782571599 | 30045078250000 | DAVIS GAS COM F | 1 | BP AMERICA PRODUCTION COMPANY | 29N 11W 27J SW NE SE | 36.69478221 | -107.9734791 | BASIN | SAN JUAN | INACTIVE | DAKOTA | 000410 | 16,714 | 2,573,971 | 211 | 6,365 |
| G | 1300430450783571599 | 30045078350000 | MANGUM | 1 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27L NE NW SW | 36.69567609 | -107.9834612 | BASIN | SAN JUAN | INACTIVE | DAKOTA | 007282 | 15,187 | 2,646,060 | | 6,350 |
| G | 1300430450786871599 | 30045078680001 | MANGUM | 1 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27L NE NW SW | 36.69567609 | -107.9834612 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 180,447 | 85,890 | 6,350 |
| G | 1300430450786871200 | 30045078680000 | SULLIVAN | 2 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 26H NW SE NE | 36.69953096 | -107.9541735 | AZTEC | SAN JUAN | INACTIVE | FRUITLAND | 015829 | | 368,487 | 716 | 1,487 |
| G | 1300430450790377200 | 30045079030000 | GARLAND B | 1 | SOUTHERN UNION PRODUCTION COMPANY | 29N 11W 27M NE SW SW | 36.69234828 | -107.9841029 | FULCHER KUTZ | SAN JUAN | INACTIVE | PICTURED CLIFFS | 251550 | 10 | 355,978 | | 1,747 |
| G | 1300430450794071599 | 30045079400000 | COOK | 1 | MANANA GAS INCORPORATED | 29N 11W 22N SW SE SW | 36.70608404 | -107.9811406 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 006258 | 41,071 | 4,343,480 | 6,176 | 6,314 |
| G | 1300430450795971200 | 30045079590000 | GRACE PEARCE | 1 | PICKETT JOHN C | 29N 11W 22O NE SW SE | 36.70664386 | -107.9750193 | AZTEC | SAN JUAN | INACTIVE | FRUITLAND | 009267 | | 804,069 | | 1,620 |
| G | 1300430450796171599 | 30045079610000 | HARTMAN | 1 | MANANA GAS INCORPORATED | 29N 11W 22P SE SE | 36.70664763 | -107.972768 | BASIN | SAN JUAN | INACTIVE | DAKOTA | 006262 | 45,556 | 5,456,777 | 9,059 | 6,308 |
| G | 1300430450798571200 | 30045080090000 | PAN AMERICAN STATE COM | 1 | COOK ROY L | 29N 11W 23K NE SW | 36.71005755 | -107.9637286 | AZTEC | SAN JUAN | INACTIVE | FRUITLAND | 570540 | | 31,853 | | 1,323 |
| G | 1300430450798571599 | 30045079850000 | PEARCE GAS COM | 1 | BP AMERICA PRODUCTION COMPANY | 29N 11W 23K NE SW | 36.70802867 | -107.9633365 | BASIN | SAN JUAN | INACTIVE | DAKOTA | 000949 | 12,630 | 1,695,598 | 2,187 | 6,274 |
| G | 1300430451200371599 | 30045120030000 | CALVIN | 1 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26M SW SW | 36.6929968 | -107.9655043 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 006883 | 25,759 | 3,648,517 | 7,941 | 6,450 |
| G | 1300430451308971200 | 30045130890000 | COOK | 2 | MANANA GAS INCORPORATED | 29N 11W 22N SE SW | 36.70619366 | -107.981141 | AZTEC | SAN JUAN | ACTIVE | FRUITLAND | 006258 | | 845,491 | 650 | 1,440 |
| G | 1300430452075277200 | 30045207520000 | LEA ANN | 1 | CHAPARRAL OIL & GAS COMPANY | 29N 11W 35E NE SW NW | 36.68464683 | -107.9667053 | FULCHER KUTZ | SAN JUAN | INACTIVE | PICTURED CLIFFS | 002529 | | 286,925 | | 1,900 |
| G | 1300430452145782829 | 30045214570000 | DELO | 10 | SOUTHLAND ROYALTY COMPANY LLC | 29N 11W 26J SW NE SE | 36.69480938 | -107.9543218 | OTERO | SAN JUAN | ACTIVE | CHACRA | 021202 | | 966,707 | 80 | 2,900 |
| G | 1300430452173277200 | 30045217320000 | GARLAND B | 1R | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27M NE SW SW | 36.69179563 | -107.9845498 | FULCHER KUTZ | SAN JUAN | INACTIVE | PICTURED CLIFFS | 007039 | 10 | 863,208 | 859 | |
| G | 1300430452263966627 | 30045226390000 | DELO | 11 | GENERAL MINERALS CORPORATION | 29N 11W 26P NW SE SE | 36.69189786 | -107.954158 | UNDESIGNATED | SAN JUAN | INACTIVE | FARMINGTON | 004502 | 162 | 124 | 116 | 1,845 |
| G | 1300430452316982329 | 30045231630000 | EARL B SULLIVAN | 1 | XTO ENERGY INCORPORATED | 29N 11W 26B SE NW NE | 36.70182344 | -107.9572261 | OTERO | SAN JUAN | ACTIVE | CHACRA | 022841 | | 745,746 | 966 | 2,861 |
| G | 1300430452355071629 | 30045235500001 | STATE GAS COM BS | 1 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 23K SW NE SW | 36.7079731 | -107.9634048 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 672,850 | 2,934 | 2,954 |
| G | 1300430452355082329 | 30045235500000 | STATE GAS COM BS | 1 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 23K SW NE SW | 36.7079731 | -107.9634048 | OTERO | SAN JUAN | INACTIVE | CHACRA | 022828 | 309 | 550,895 | 3,926 | 2,954 |
| G | 1300430452355482329 | 30045235540000 | DAVIS GAS COM G | 1 | XTO ENERGY INCORPORATED | 29N 11W 27I SW NE SE | 36.69465987 | -107.9732919 | OTERO | SAN JUAN | INACTIVE | CHACRA | 022685 | | 337,989 | 747 | 2,951 |
| G | 1300430452408271599 | 30045240820000 | PEARCE GAS COM | 1E | XTO ENERGY INCORPORATED | 29N 11W 23J SE NW SE | 36.70815961 | -107.9565825 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 022629 | 3,328 | 474,351 | 5,412 | 6,365 |
| G | 1300430452408371599 | 30045240830000 | SULLIVAN GAS COM D | 1E | XTO ENERGY INCORPORATED | 29N 11W 26F NW SE NW | 36.69993082 | -107.9642882 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 022839 | 6,902 | 1,458,755 | 7,940 | 6,329 |
| G | 1300430452408471599 | 30045240840000 | DAVIS GAS COM F | 1E | XTO ENERGY INCORPORATED | 29N 11W 27H NW SE NE | 36.69983513 | -107.9731908 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 023416 | 4,262 | 905,546 | 8,033 | 6,386 |
| G | 1300430452408482329 | 30045240840000 | DAVIS GAS COM F | 1E | XTO ENERGY INCORPORATED | 29N 11W 27H NW SE NE | 36.69983513 | -107.9731908 | OTERO | SAN JUAN | ACTIVE | CHACRA | 023416 | | 451,277 | 2,457 | 8,386 |
| G | 1300430452457282329 | 30045245720000 | CONGRESS | 9 | SOUTHLAND ROYALTY COMPANY LLC | 29N 11W 26N NW SE SW | 36.69192545 | -107.9635484 | OTERO | SAN JUAN | ACTIVE | CHACRA | 021193 | | 233,679 | 1,485 | 2,962 |
| G | 1300430452457382329 | 30045245730000 | GARLAND | 3 | SOUTHLAND ROYALTY COMPANY LLC | 29N 11W 27M NE SW SW | 36.6927039 | -107.9844958 | OTERO | SAN JUAN | ACTIVE | CHACRA | 021914 | | 305,435 | 1,140 | 2,909 |
| G | 1300430452457482329 | 30045245740000 | SUMMIT | 9 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 34A SW NE NE | 36.687182 | -107.9722658 | OTERO | SAN JUAN | ACTIVE | CHACRA | 007557 | | 350,082 | 1,220 | 2,992 |
| G | 1300430452467371599 | 30045246730000 | MANGUM | 1E | BURLINGTON RESOURCES O&G CO LP | 29N 11W 27F NW SE NW | 36.69973724 | -107.9815395 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 007282 | 4,630 | 474,439 | 2,506 | 6,240 |
| G | 1300430452477271599 | 30045247720000 | CALVIN | 1E | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26J NW SE SE | 36.69192559 | -107.9551454 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 006883 | 2,986 | 1,085,534 | 8,346 | 6,502 |
| G | 1300430452483771599 | 30045248370000 | CONGRESS | 4E | BURLINGTON RESOURCES O&G CO LP | 29N 11W 35E NE SW NW | 36.6849902 | -107.9659406 | BASIN | SAN JUAN | ACTIVE | DAKOTA | 006918 | 370 | 160,434 | 1,661 | 6,500 |
| G | 1300430452483782329 | 30045248370000 | CONGRESS | 4E | BURLINGTON RESOURCES O&G CO LP | 29N 11W 35E NE SW NW | 36.6849902 | -107.9659406 | OTERO | SAN JUAN | ACTIVE | CHACRA | 006918 | | 172,025 | 2,536 | 8,508 |
| G | 1300430452532971629 | 30045253290000 | DAVIS GAS COM J | 1 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 26F NW SE NW | 36.69991548 | -107.9644588 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 330,236 | 27,028 | 4,941 |
| G | 1300430452532972329 | 30045253290000 | DAVIS GAS COM J | 1 | BP AMERICA PRODUCTION COMPANY | 29N 11W 26F NW SE NW | 36.69991548 | -107.9644588 | BLANCO | SAN JUAN | INACTIVE | MESAVERDE | 000412 | 130 | 619 | 1,100 | 5,941 |
| G | 1300430452532982329 | 30045253290000 | DAVIS GAS COM J | 1 | XTO ENERGY INCORPORATED | 29N 11W 26F NW SE NW | 36.69991548 | -107.9644588 | OTERO | SAN JUAN | INACTIVE | CHACRA | 022801 | | 181,392 | 893 | 5,951 |
| G | 1300430452562102290 | 30045256210000 | EARL B SULLIVAN | 2 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 26H SE SE NE | 36.69824062 | -107.9525892 | ARMENTA | SAN JUAN | INACTIVE | GALLUP /SD/ | 022841 | 2,426 | 79,691 | 657 | 5,760 |
| G | 1300430452562182329 | 30045256210001 | EARL B SULLIVAN | 2 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 26H SE SE NE | 36.69824062 | -107.9525892 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 320,803 | 3,183 | |
| G | 1300430452570702290 | 30045257070000 | SUMMIT | 15 | SOUTHLAND ROYALTY COMPANY LLC | 29N 11W 34C NE NE NW | 36.68874761 | -107.9804042 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | 021407 | 5,765 | 142,149 | 1,247 | 6,216 |
| G | 1300430452672182329 | 30045267210000 | NANCY HARTMAN | 2 | MANANA GAS INCORPORATED | 29N 11W 22P NW SE SE | 36.70637919 | -107.9723245 | OTERO | SAN JUAN | ACTIVE | CHACRA | 006264 | | 325,500 | 1,244 | 2,830 |
| G | 1300430452673182329 | 30045267310000 | MARY JANE | 1 | MANANA GAS INCORPORATED | 29N 11W 22N SW SE SW | 36.70553482 | -107.9810701 | OTERO | SAN JUAN | ACTIVE | CHACRA | 006270 | | 434,028 | 1,556 | 2,850 |
| G | 1300430452736171200 | 30045273610000 | LAUREN KELLY | 1 | MANANA GAS INCORPORATED | 29N 11W 27F NW SE NW | 36.69985569 | -107.9820557 | AZTEC | SAN JUAN | ACTIVE | FRUITLAND | 006268 | | 151,744 | 1,120 | 1,500 |
| G | 1300430452736582329 | 30045273650000 | MARIAN S | 1 | MANANA GAS INCORPORATED | 29N 11W 27F NW SE NW | 36.69966343 | -107.9820563 | OTERO | SAN JUAN | ACTIVE | CHACRA | 006269 | | 166,541 | 1,900 | 2,840 |
| I | 1300430453078896436 | 30045307880000 | ASHCROFT SWD | 1 | XTO ENERGY INCORPORATED | 29N 11W 26B SW NW NE | 36.70129353 | -107.9586722 | SWD | SAN JUAN | ACTIVE | ENTRADA | | | | | |
| G | 1300430453083302290 | 30045308330001 | DAVIS GAS COM F | 1R | XTO ENERGY INCORPORATED | 29N 11W 27I SW NE SE | 36.69461272 | -107.9721325 | ARMENTA | SAN JUAN | ACTIVE | GALLUP /SD/ | | 3,866 | 46,691 | 8,853 | |
| G | 1300430453083982329 | 30045308330000 | DAVIS GAS COM F | 1R | XTO ENERGY INCORPORATED | 29N 11W 27I SW NE SE | 36.69461272 | -107.9721325 | BASIN | SAN JUAN | ACTIVE | DAKOTA | | 823 | 226,981 | 107,913 | |
| G | 1300430453111871629 | 30045311180000 | CALVIN | 100 | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26N NW SE SW | 36.69257114 | -107.9632207 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 200,914 | 9,135 | |
| G | 1300430453309371599 | 30045330930000 | CALVIN | 1F | BURLINGTON RESOURCES O&G CO LP | 29N 11W 26J SW NW SE | 36.6942192 | -107.9587095 | BASIN | SAN JUAN | ACTIVE | DAKOTA | | 2,529 | 300,103 | 15,362 | 6,725 |
| G | 1300430453431271629 | 30045343120000 | ROYAL FLUSH | 1 | MANANA GAS INCORPORATED | 29N 11W 22N W2 SE SW | 36.70572753 | -107.9808151 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 116,412 | 6,720 | 1,810 |
| G | 1300430453440971629 | 30045344090000 | JACQUE | 2 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 27H NW SE NE | 36.69957456 | -107.9729694 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 62,853 | 3,225 | 1,897 |
| G | 1300430453446371629 | 30045344630000 | JACQUE | 1 | HOLCOMB OIL & GAS INCORPORATED | 29N 11W 27L | 36.69410423 | -107.9721853 | BASIN | SAN JUAN | ACTIVE | FRUITLAND COAL | | | 75,123 | 8,922 | 1,890 |

To be P&A'd

Other SWD in 1-mile AOR

Penetrations - 1 mile - SWD (1)

**Bloomfield Terminal**
**Western Refining Southwest, Inc.**
**Proposed Waste Disposal Well (WDW) #2**
**Sources of Injection Fluids**
**Table 1**

| Waste Water Source | Description | Waste Type | Frequency | Discharge Volume |
|---|---|---|---|---|
| Waste Water Treatment System Effluent | The waste water treatment system processes waste water from terminal. The system consists of three stages : an API Separator, Benzene Strippers and Aeration Lagoons (aka. Aggressive Biological Treatment).[1,2] | Non-Exempt | Routine | October to April - 20 to 50 GPM<br>April to October - 50 to 100 GPM |
| Contact Storm Water - Evaporation Ponds | Precipitation (storm water) that falls into the evaporation ponds is contained and discharged directly to the WDW #2 injection well. | Non-Exempt | Non-Routine | Dependent on Precipitation |
| Injection Well Stimulation and Maintenance | Fluids produced from the injection well during stimulation and maintenance operations. | Non-Exempt | Non-Routine | Dependent on scope of work |

1. Final waste water treatment consists of Aggressive Biological Treatment (ABT).

2. Process Sewer System conveys waste water from various collection points to the waste water treatment system.

**Bloomfield Terminal**
**Western Refining Southwest, Inc.**
**Proposed Waste Disposal Well (WDW) #2**
**Waste Water Treatment Plant Influent**
**Table 2**

| Waste Water Source | Description | Waste Type | Frequency | Discharge Volume |
|---|---|---|---|---|
| Recovered Ground Water | Ground water remediation efforts includes pump and treat remedies. Hydrocarbon impacted water is recovered from multiple recovery wells and the Hammond Ditch French Drain Recovery System. Recovered water containing trace hydrocarbons is discharged to the process sewer system.[1,2] | Non-Exempt | Routine | October to April - 15 to 45 GPM<br>April to October - 30 to 90 GPM |
| Boiler | Boiler blowdown waste water containing dissolved solids is discharged to the terminal process sewer system. | Non-Exempt | Routine | 1,200 gallons per day |
| Heater Treater at Terminals | Steam is used to separate water from crude oil. Waste water containing trace hydrocarbons and dissolved solids is discharged to process sewer system. | Non-Exempt[3] | Routine | 150 gallons per day |
| Boiler Feed Water Treatment System | Raw water is treated by this system to remove impurities before being supplied as feed water to the boiler system. Waste water from water softening units containing dissolved solids is routinely discharged to the process sewer system.[1] | Non-Exempt | Routine | 280 gallons per day |
| Storage Tanks | Crude and product storage tanks are occasionally drained of bottom/decanted water. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system. | Non-Exempt[3] | Non-Routine | Dependent on Crude/Product Quality |
| Recoverable Material | The recoverable material is processed by the API Separator to recover the oil from water. | Non-Exempt[3] | Non-Routine | Dependent of Water Fraction |
| Process Equipment Cleaning | Wash water used in maintenance of process equipment. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system. | Non-Exempt | Non-Routine | Dependent on Maintenance Scope and Schedule |
| Hydrotest Water | Water used for Mechanical Integrity Testing (MIT) of equipment such as Tanks, piping, etc. Waste water containing trace hydrocarbons and dissolved solids is discharged to the process sewer system. | Non-Exempt[3] | Non-Routine | Dependent of MIT Scope and Schedule |
| Contact Storm Water | Storm water exposed to contaminants by contact with process equipment is contained and discharged to the process sewer system. Contact storm water may contain trace hydrocarbons and dissolved solids. | Non-Exempt | Non-Routine | Dependent on Precipitation |

1. Process Sewer System conveys waste water from various collection points to the waste water treatment system.

2. The River Terrace recovered groundwater is treated using a Granular Activated Carbon (GAC) System. The GAC effluent is recycled in the terminal process water system.

3. Bloomfield Terminal is a transportation facility. The exemption of oil and gas exploration and production wastes does not apply to transportation facilities.

## Table 3

## Injection Well
## 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| **Volatile Organic Compounds** *(ug/L)* | | 1/23/2014 | | 7/28/2014 | 10/1/2014 |
| 1,1,1,2-Tetrachloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1,1-Trichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | | < 20 | na | < 4.0 | < 10 |
| 1,1,2-Trichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloroethene | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,3-Trichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,3-Trichloropropane | | < 20 | na | < 4.0 | < 10 |
| 1,2,4-Trichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,4-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dibromo-3-chloropropane | | < 20 | na | < 4.0 | < 10 |
| 1,2-Dibromoethane (EDB) | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloroethane (EDC) | 500 | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloropropane | | < 10 | na | < 2.0 | < 5.0 |
| 1,3,5-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichloropropane | | < 10 | na | < 2.0 | < 5.0 |
| 1,4-Dichlorobenzene | 7500 | < 10 | na | < 2.0 | < 5.0 |
| 1-Methylnaphthalene | | < 40 | na | < 8.0 | < 20 |
| 2,2-Dichloropropane | | < 20 | na | < 4.0 | < 10 |
| 2-Butanone | | 200 | na | < 20 | < 50 |
| 2-Chlorotoluene | | < 10 | na | < 2.0 | < 5.0 |
| 2-Hexanone | | < 100 | na | < 20 | < 50 |
| 2-Methylnaphthalene | | < 40 | na | < 8.0 | < 20 |
| 4-Chlorotoluene | | < 10 | na | < 2.0 | < 5.0 |
| 4-Isopropyltoluene | | < 10 | na | < 2.0 | < 5.0 |
| 4-Methyl-2-pentanone | | < 100 | na | < 20 | < 50 |
| Acetone | | 1400 | na | 85 | 120 |
| Benzene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Bromobenzene | | < 10 | na | < 2.0 | < 5.0 |
| Bromodichloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Bromoform | | < 10 | na | < 2.0 | < 5.0 |
| Bromomethane | | < 30 | na | < 6.0 | < 15 |
| Carbon disulfide | | < 100 | na | < 20 | < 50 |
| Carbon Tetrachloride | 500 | < 10 | na | < 2.0 | < 5.0 |
| Chlorobenzene | 100000 | < 10 | na | < 2.0 | < 5.0 |
| Chloroethane | | < 20 | na | < 4.0 | < 10 |
| Chloroform | 6000 | < 10 | na | < 2.0 | < 5.0 |
| Chloromethane | | < 30 | na | < 6.0 | < 15 |
| cis-1,2-DCE | | < 10 | na | < 2.0 | < 5.0 |
| cis-1,3-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| Dibromochloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Dibromomethane | | < 10 | na | < 2.0 | < 5.0 |
| Dichlorodifluoromethane | | < 10 | na | < 2.0 | < 5.0 |
| Ethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Hexachlorobutadiene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Isopropylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Methyl tert-butyl ether (MTBE) | | < 10 | na | < 2.0 | < 5.0 |
| Methylene Chloride | | < 30 | na | < 6.0 | < 15 |
| Naphthalene | | < 30 | na | < 4.0 | < 10 |
| n-Butylbenzene | | < 10 | na | < 6.0 | < 15 |
| n-Propylbenzene | | < 20 | na | < 2.0 | < 5.0 |
| sec-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Styrene | | < 10 | na | < 2.0 | < 5.0 |
| tert-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Tetrachloroethene (PCE) | | < 10 | na | < 2.0 | < 5.0 |
| Toluene | | < 10 | na | < 2.0 | < 5.0 |
| trans-1,2-DCE | | < 10 | na | < 2.0 | < 5.0 |
| trans-1,3-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| Trichloroethene (TCE) | | < 10 | na | < 2.0 | < 5.0 |
| Trichlorofluoromethane | | < 10 | na | < 2.0 | < 5.0 |
| Vinyl chloride | 200 | < 10 | na | < 2.0 | < 5.0 |
| Xylenes, Total | | < 15 | na | < 3.0 | < 7.5 |

## Table 3

## Injection Well
## 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds *(ug/L)*** | | | | | |
| 1,2,4-Trichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,2-Dichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,3-Dichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,4-Dichlorobenzene | 7500 | < 50 | na | < 100 | < 10 |
| 1-Methylnaphthalene | | < 50 | na | < 100 | < 10 |
| 2,4,5-Trichlorophenol | | < 50 | na | < 100 | < 10 |
| 2,4,6-Trichlorophenol | 2000 | < 50 | na | < 100 | < 10 |
| 2,4-Dichlorophenol | | < 100 | na | < 200 | < 20 |
| 2,4-Dimethylphenol | | < 50 | na | < 100 | < 10 |
| 2,4-Dinitrophenol | | < 100 | na | < 200 | < 20 |
| 2,4-Dinitrotoluene | 130 | < 50 | na | < 100 | < 10 |
| 2,6-Dinitrotoluene | | < 50 | na | < 100 | < 10 |
| 2-Chloronaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Chlorophenol | | < 50 | na | < 100 | < 10 |
| 2-Methylnaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Methylphenol | | < 50 | na | < 200 | < 20 |
| 2-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 2-Nitrophenol | | < 50 | na | < 100 | < 10 |
| 3,3'-Dichlorobenzidine | | < 50 | na | 210 | < 10 |
| 3+4-Methylphenol | | < 50 | na | < 100 | < 10 |
| 3-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 4,6-Dinitro-2-methylphenol | | < 100 | na | < 200 | < 20 |
| 4-Bromophenyl phenyl ether | | < 50 | na | < 100 | < 10 |
| 4-Chloro-3-methylphenol | | < 50 | na | < 100 | < 10 |
| 4-Chloroaniline | | < 50 | na | < 100 | < 10 |
| 4-Chlorophenyl phenyl ether | | < 50 | na | < 100 | < 10 |
| 4-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 4-Nitrophenol | | < 50 | na | < 100 | < 10 |
| Acenaphthene | | < 50 | na | < 100 | < 10 |
| Acenaphthylene | | < 50 | na | < 100 | < 10 |
| Aniline | | < 50 | na | < 100 | < 10 |
| Anthracene | | < 50 | na | < 100 | < 10 |
| Azobenzene | | < 50 | na | < 100 | < 10 |
| Benz(a)anthracene | | < 50 | na | < 100 | < 10 |
| Benzo(a)pyrene | | < 50 | na | < 100 | < 10 |
| Benzo(b)fluoranthene | | < 50 | na | < 100 | < 10 |
| Benzo(g,h,i)perylene | | < 50 | na | < 100 | < 10 |
| Benzo(k)fluoranthene | | < 50 | na | < 100 | < 10 |
| Benzoic acid | | < 100 | na | < 200 | < 40 |
| Benzyl alcohol | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethoxy)methane | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethyl)ether | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroisopropyl)ether | | < 50 | na | < 100 | < 10 |
| Bis(2-ethylhexyl)phthalate | | < 50 | na | < 100 | < 10 |
| Butyl benzyl phthalate | | < 50 | na | < 100 | < 10 |
| Carbazole | | < 50 | na | < 100 | < 10 |
| Chrysene | | < 50 | na | < 100 | < 10 |
| Dibenz(a,h)anthracene | | < 50 | na | < 100 | < 10 |
| Dibenzofuran | | < 50 | na | < 100 | < 10 |
| Diethyl phthalate | | < 50 | na | < 100 | < 10 |
| Dimethyl phthalate | | < 50 | na | < 100 | < 10 |
| Di-n-butyl phthalate | | < 50 | na | < 100 | < 10 |
| Di-n-octyl phthalate | | < 50 | na | < 100 | < 20 |
| Fluoranthene | | < 50 | na | < 100 | < 10 |
| Fluorene | | < 50 | na | < 100 | < 10 |
| Hexachlorobenzene | 130 | < 50 | na | < 100 | < 10 |
| Hexachlorobutadiene | 500 | < 50 | na | < 100 | < 10 |
| Hexachlorocyclopentadiene | | < 50 | na | < 100 | < 10 |
| Hexachloroethane | 3000 | < 50 | na | < 100 | < 10 |
| Indeno(1,2,3-cd)pyrene | | < 50 | na | < 100 | < 10 |
| Isophorone | | < 50 | na | < 100 | < 10 |
| Naphthalene | | < 50 | na | < 100 | < 10 |
| Nitrobenzene | 2000 | < 50 | na | < 100 | < 10 |
| N-Nitrosodimethylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodi-n-propylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodiphenylamine | | < 50 | na | < 100 | < 10 |
| Pentachlorophenol | 100000 | < 100 | na | < 200 | < 20 |
| Phenanthrene | | < 50 | na | < 100 | < 10 |
| Phenol | | < 50 | na | < 100 | < 10 |
| Pyrene | | < 50 | na | < 100 | < 10 |
| Pyridine | 5000 | < 50 | na | < 100 | < 10 |

## Table 3

## Injection Well
## *2014 Quarterly Analytical Summary*

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| **General Chemistry** *(mg/L unless otherwise stated)* | | | | | |
| Specific Conductance *(umhos/cm)* | | 7100 | na | 1900 | 1100 |
| Chloride | | 2400 | na | 510 | 220 |
| Sulfate | | 35 | na | 41 | 26 |
| Total Dissolved Solids | | 5240 | na | 1380 | 742 |
| pH *(pH Units)* | | 6.25 | na | 7.10 | 7.08 |
| Bicarbonate (As CaCO3) | | 380 | na | 220 | 150 |
| Carbonate (As CaCO3) | | <2.0 | na | <2.0 | <2.0 |
| Calcium | | 490 | na | 480 | 110 |
| Magnesium | | 75 | na | 99 | 23 |
| Potassium | | 37 | na | 36 | 8.2 |
| Sodium | | 1000 | na | 1100 | 220 |
| Total Alkalinity (as CaCO3) | | 380 | na | 220 | 150 |
| **Total Metals** *(mg/L)* | | | | | |
| Arsenic | 5.0 | < 0.020 | na | < 0.020 | < 0.020 |
| Barium | *100.0* | *0.56* | *na* | *0.63* | *0.20* |
| Cadmium | 1.0 | < 0.0020 | na | < 0.0020 | < 0.0020 |
| Chromium | 5.0 | < 0.0060 | na | < 0.0060 | < 0.0060 |
| Lead | 5 | < 0.0050 | na | < 0.0050 | < 0.0050 |
| Selenium | 1 | < 0.050 | na | < 0.050 | < 0.050 |
| Silver | 5 | < 0.0050 | na | < 0.0050 | < 0.0050 |
| Mercury | 0.2 | < 0.0010 | na | < 0.00020 | < 0.00020 |
| **Ignitability, Corrosivity, and Reactivity** | | | | | |
| Reactive Cyanide *(mg/L)* | | <1.0 | na | <1.0 | <1.0 |
| Reactive Sulfide *(mg/kg)* | | 1.6 | na | <1.0 | 3.0 |
| Ignitability *(° F)* | < 140° F | >200 | na | >200 | >200 |
| Corrosivity (ph Units) | ≤ 2 or ≥ 12.5 | 6.25 | na | 7.44 | 6.82 |

Notes:

na = A water sample was not collected during the 2nd quarter of 2014 because the well was not operational.

5. A water sample and corresponding water analysis will be provided once the well is perforated and a water sample can be obtained. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately 3/4 miles to the east. The Ashcroft is a SWD well operated by XTO Energy Resources and is completed in the Entrada and Bluff formations. The NMOCD records did not containing any data regarding the in-situ water quality found in the Ashcroft SWD #1 prior to injection.

VIII. Geology

Underground Drinking Water Sources

The known fresh water zones for the immediate area of the injection well are the Nacimiento and Ojo Alamo Formations of the Tertiary Age. The Nacimiento occurs at the surface and is about 570 feet thick in the immediate area. The Ojo Alamo is about 165 feet thick at an approximate depth of 569 to 734 feet.

Most of the water wells in the surrounding area are concentrated along the San Juan River flood plain and terraces north of the river and Bloomfield Terminal. These wells are completed in the Quaternary sand and gravels at depth of approximately 25 to 75 feet. These sand and gravels rest upon the Nacimiento.

One well (POD# SJ 02148) in the SE quarter of Section 27, T29N, R11W was drilled to a depth of 305 feet intersecting a water bearing sand within the Nacimiento at 225 to 285 feet with an estimated yield of 10gpm. The surface elevation is approximately 20 feet above the surface at proposed injection well location. The total depth of the well is at an approximate elevation of 5,250 feet. This is the deepest water well drilled in the study area according to the NM State Engineer's Office online records. The Point of Diversion Summary for the well is included (below).

Ojo Alamo fm also identified as protectable waters – Sources: Stone & OFR 566

# New Mexico Office of the State Engineer
# Point of Diversion Summary

| POD Number | (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64 | Q16 | Q4 | Sec | Tws | Rng | (NAD83 UTM in meters) X | Y |
|---|---|---|---|---|---|---|---|---|
| SJ 02148 | 2 | 4 | | 27 | 29N | 11W | 234448 | 4065184* |

**Driller License:** 847
**Driller Name:** SAVAGE, BOB

| | | | | | |
|---|---|---|---|---|---|
| **Drill Start Date:** | 10/20/1987 | **Drill Finish Date:** | 11/16/1987 | **Plug Date:** | |
| **Log File Date:** | 11/19/1987 | **PCW Rcv Date:** | | **Source:** | Shallow |
| **Pump Type:** | | **Pipe Discharge Size:** | | **Estimated Yield:** | 10 GPM |
| **Casing Size:** | 7.00 | **Depth Well:** | 305 feet | **Depth Water:** | 186 feet |

| Water Bearing Stratifications: | Top | Bottom | Description |
|---|---|---|---|
| | 225 | 285 | Sandstone/Gravel/Conglomerate |

| Casing Perforations: | Top | Bottom |
|---|---|---|
| | 266 | 305 |

No sample available - on record as part of remediation project for facility

*UTM location was derived from PLSS - see Help

Injection Zone

The Entrada Sandstone formation is Jurassic in age and is described as a wind blown deposit with fine to coarse-grained sandstone particles, clean and well sorted. Generally, the Entrada Sandstone formation is 200 to 280 ft thick throughout the San Juan Basin. Natural fractures are few to nonexistent. The overlaying formation is the Todilto Limestone. Cores from the oil bearing portion of the Entrada formation indicate high porosities and permeability's with averages ranging from 22 – 26 percent and 150 – 450 millidarcies respectively.

The Bluff Sandstone maybe considered as a future injection zone and is not part of this application.

The geologic prognosis and a cross section showing the regional thickness and log characteristics are included (below).

## Waste Disposal Well (WDW) #2

**Geologic Prognosis** — Entrada & Bluff WDW, San Juan County

Header

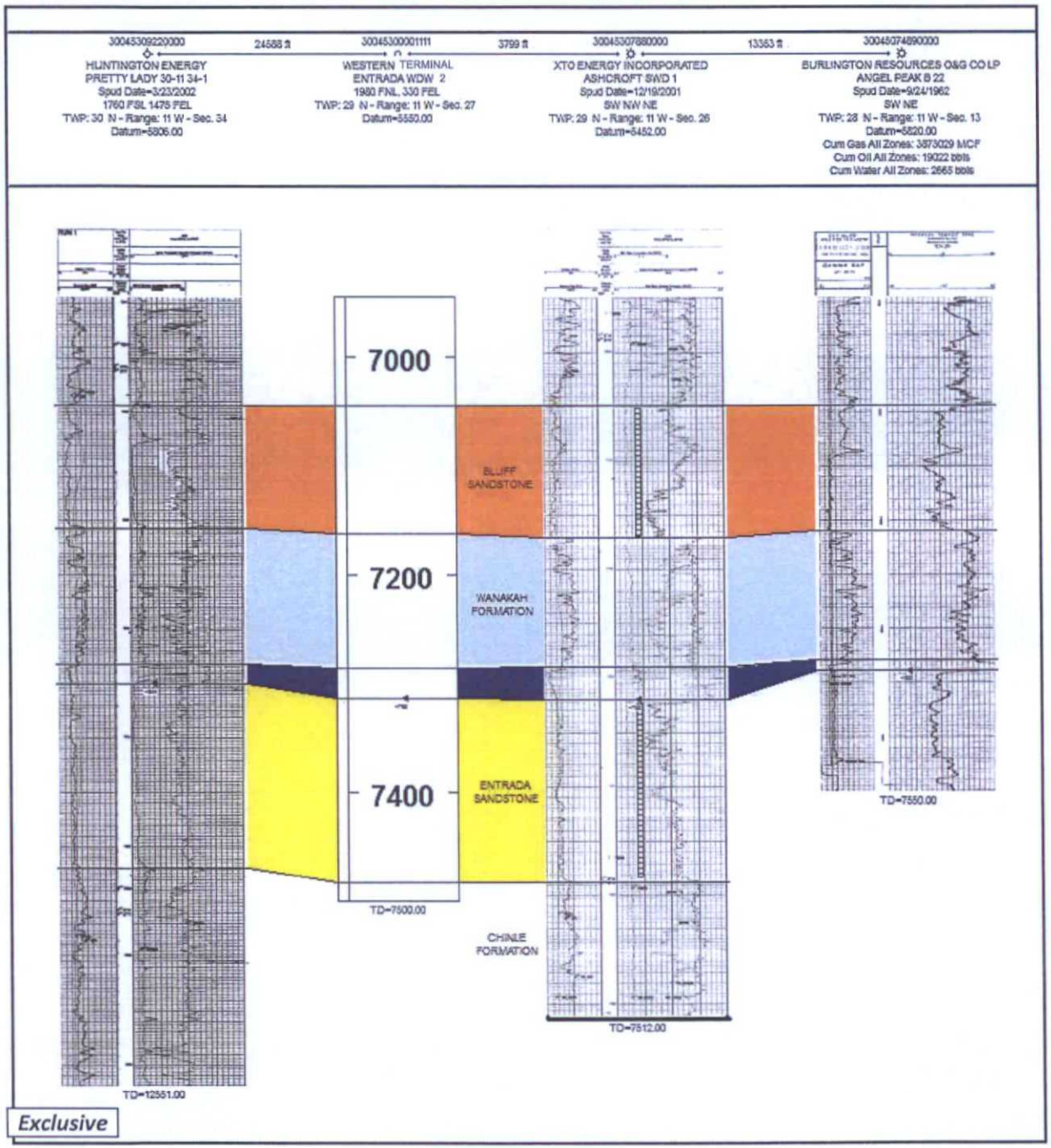
Well Name & Number: Waste Disposal Well (WDW) #2
API: Pending Latitude (NAD 83): 36.698499 Objective: Entrada & Bluff FM Water Disposal Longitude (NAD 83): -107.971156 Location: TWP: 29 N - Range: 11 W - Sec. 27 Field: Basin
Surface Location Footage: 1980 FNL, 330 FEL County: San Juan
Bottom Hole Location Footage: Same as Surface State: New Mexico Lease: GL Elevation: 5538
Surface Owner: KB Elevation: 5550
Type: Proposed TD: 7500 November 25, 2015
Expiration Date: Proposed Plugback: Geologist: Peter Kondrat Depth:

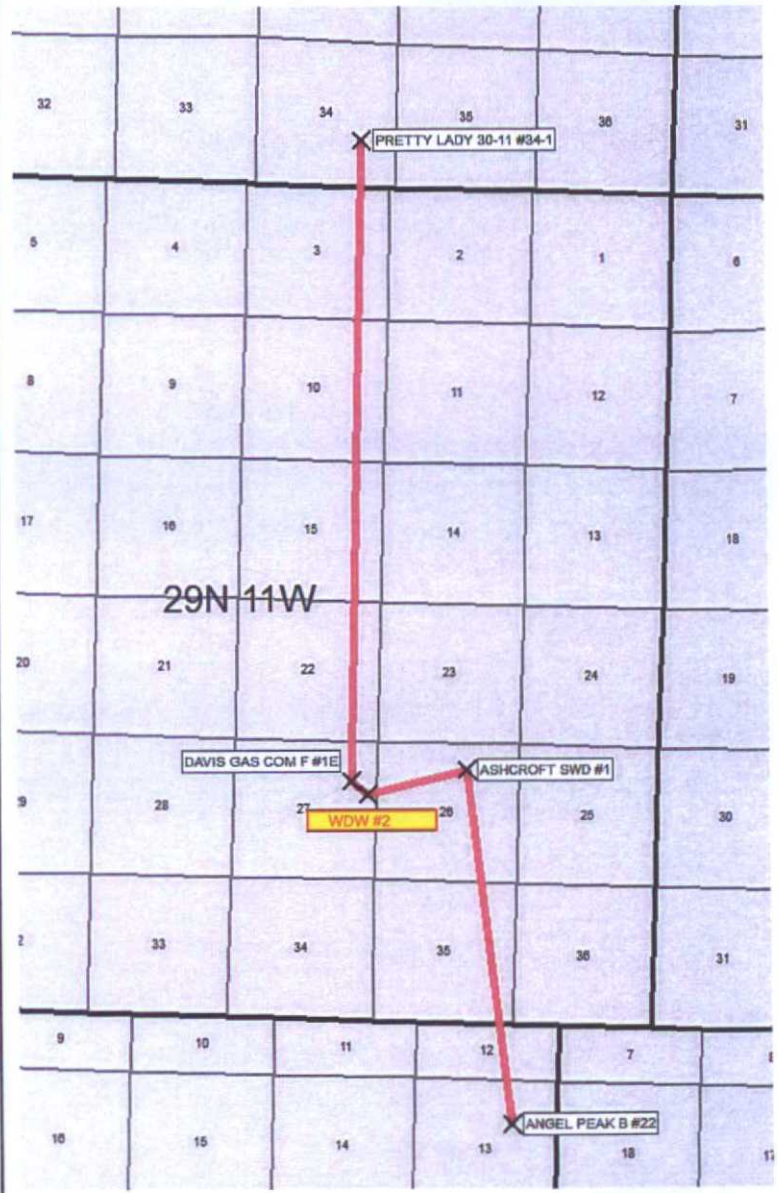
| Formation Tops | Top MD (KB) | Top Subsea (KB) | Thickness (FT) | Rock Type | Drilling Notes | Depositional Environment |
|---|---|---|---|---|---|---|
| Quaternary Alluvium | 0 | 5550 | 10 | Unconsolidated Gravels | Boulders, water, lost circulation | Continental Rivers |
| Naclemento FM | 10 | 5540 | 505 | Shale & Sandstone | Water, gas | Continental Rivers |
| Ojo Alamo Sandstone | 515 | 5035 | 110 | Sandstone & Shale | Water, gas | Continental Rivers |
| Kirtland Shale | 625 | 4925 | 578 | Interbeddded Shale, sandstone | Water, gas | Coastal to Alluvial Plain |
| Fruitland FM | 1203 | 4347 | 515 | Interbeddded Shale, sandstone & coal | Coalbed methane | Coastal Plain |
| Pictured Cliffs Sandstone | 1718 | 3832 | 162 | Sandstone | Gas, water | Regressive Marine Beach |
| Lewis Shale | 1880 | 3670 | 780 | Shale, thin limestones | Gas | Offshore Marine |
| Huerfanito Bentonite Bed | 2660 | 2890 | 28 | Alterted volcanic ash, bentonite bed | Swelling clay | Volcanic Ash Layers |
| Chacra FM | 2688 | 2862 | 189 | Sandstone, siltstone | Gas, Water | Offshore Marine Sands |
| *Lower Lewis Shale* | *2877* | *2673* | 458 | *Shale, thin limestones* | *Gas, Water* | *Offshore Marine* |
| Cliff House Sandstone | 3335 | 2215 | 59 | Sandstone | Gas, Water, Oil | Transgressive Marine Beach |
| Menefee Member | 3394 | 2156 | 643 | Interbeddded Shale, sandstone & coal | Gas, Water, Oil | Coastal Plain |
| Point Lookout Sandstone | 4037 | 1513 | 386 | Sandstone | Gas, Water, Oil | Regressive Marine Beach |
| Mancos Shale | 4423 | 1127 | 869 | Shale, thin sandstones & siltstones | Gas, Water, Oil | Offshore Marine |
| Niobrara A | 5292 | 258 | 102 | Interbeddded Shale, sandstone | Oil, Gas, Water | Offshore Marine Sands |
| Niobrara B | 5394 | 156 | 123 | Interbeddded Shale, sandstone | Oil, Gas, Water | Offshore Marine Sands |
| Niobrara C | 5517 | 33 | 82 | Interbeddded Shale, sandstone | Oil, Gas, Water | Offshore Marine Sands |
| Gallup FM | 5599 | -49 | 243 | Interbeddded Shale, sandstone | Oil, Gas, Water | Regressive Marine to Coastal Deposit |
| Juana Lopez FM | 5842 | -292 | 123 | Shale, thin limestones | Oil, Gas, Water | Offshore Marine |
| Carlile Shale | 5965 | -415 | 95 | Shale, thin limestones | Oil, Gas, Water | Offshore Marine |
| Greenhorn Limestone | 6060 | -510 | 56 | Limestone | Oil, Gas, Water | Offshore Marine |
| Graneros Shale | 6116 | -566 | 33 | Shale | Oil, Gas, Water | Offshore Marine |
| Dakota FM | 6149 | -599 | 216 | Sandstone, shale & coals | Oil, Gas, Water | Transgressive Coastal Plain to Marine |
| Burro Canyon FM | 6365 | -815 | 46 | Sandstones, some conglomerate & mudstone | Oil, Gas, Water | Braided Fluvial Fill |
| Morrison FM | 6411 | -861 | 635 | Mudstones, sandstone | Oil, Gas, Water | Continental Rivers |
| **Bluff Sandstone (aka Junction Creek Sandstone), Morrison FM Member** | 7046 | -1496 | 118 | Sandstone | Oil, Gas, Water | Alluvial Plain and Eolian |
| Wanakah FM | 7164 | -1614 | 123 | Siltstone, Sandstone | Oil, Gas, Water | Alluvial Plain and Eolian |
| Todilto Limestone & Anhydrite | 7287 | -1737 | 28 | Interbedded Limestone & Anhydrite | Oil, Gas, Water, Anyhydrite | Alluvial Plain and Eolian |
| Entrada Sandstone | 7315 | -1765 | 168 | Sandstone | Oil, Gas, Water | Eolian Sand Dunes |
| Chinle FM | 7483 | -1933 | 17 | Interbeddded Shale, sandstone | Oil, Gas, Water | Continental Rivers |
| *Proposed TD* | *7500* | *-1950* | | *TD designed for complete log coverage over Entrada Sandstone.* | | |

Notes: Any significant flow rates, abnormal pressures, lost circulation, sticking, fluid loss or gain immediately notify company man, drilling superintendent and/or drilling engineer.

# Regional Bluff & Entrada Sandstones Cross-Section

Western Refining




Exclusive

K4

IX. After the well is drilled, cased and perforated an injectivity test will be performed. If the injection rate is less than 6 BPM prior to parting pressure, the well will be stimulated w/ approximately 222,000 lbs of 20/40 white sand in 110,000 gals of 30# cross linked gel at 50 bpm. Note: actual job design (if needed) will be based on actual results of the injectivity test.

X. All open hole and cased hole logs will be filed with NMOCD once the well is drilled and completed.

XII. Available geologic and engineering data has been examined and no evidence of open faults or any other hydrological connection between the disposal zone, the Entrada Formation, and any underground sources of drinking water, the Nacimiento Formation.

XIII. Based on the information available online as well as information from the "Four Corners Geological Society" there are no known faults located in the area of the proposed well. Natural fractures are few to nonexistent in the Entrada formation. The overlaying formation is the relatively impermeable Todilto Limestone. The closest off set is the Ashcroft SWD #1 (API# 30-045-30788) located approximately ¾ of mile to the east of the proposed injection well. The Ashcroft SWD #1 is a SWD well operated by XTO Energy and is completed in the Bluff and Entrada formations and has no evidence of water migrating out of the injection zones.

Compiled & prepared by Allen Haines - Western

XIII. Public Notice will follow NMOCD review of this application.] for Class I (NH)

Class II provide in initial application in 12/2016.

## AFFIDAVIT OF PUBLICATION

**Ad No. 72205**

## STATE OF NEW MEXICO
**County of San Juan:**

SAMMY LOPEZ, being duly sworn says: That he IS the PUBLISHER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Monday, December 14, 2015

And the cost of the publication is $60.13

ON 12/15/15 SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document.

Christine Sellers

OFFICIAL SEAL
CHRISTINE SELLERS
Notary Public
State of New Mexico
My Comm. Expires 11/05/19

## COPY OF PUBLICATION

Western Refining Southwest, Inc., represented by John Thompson (505) 327-4892, has applied to the New Mexico Oil Conservation Division for administrative approval to be authorized to inject non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the proposed Class I (non-hazardous) disposal well. The proposed SWD #2, will be located 2019' FNL & 110' FEL, Section 27, T29N, R11W, San Juan County, New Mexico.

The proposed injection zone is the Entrada formation. The estimated injection depths are 7315' to 7,483' and the maximum anticipated injection rate is 8000 BPD. The maximum injection pressure will be determined from a step rate test. Interested parties can make comments to this application to the NM Oil Conservation Division, 1220 St. Francis Dr., Santa Fe, NM 87505. Comments must be received within 15 days of the date of this publication.

Legal No. 72205 published in The Daily Times on Dec 14, 2015

December 10, 2015

**VIA CERTIFIED MAIL**

Attn: Crystal Walker (Regulatory
Coordinator)
Burlington Resources Oil & Gas Company LP
3401 E. 30th Street
Farmington, NM 87402

**Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.**

Dear Ms. Walker,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator (the Calvin #1 is within a half mile of the proposed SWD #2) you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

**VIA CERTIFIED MAIL**

Attn: Diane Montano (Regulatory
Compliance Mgr.)
XTO Energy, Inc.
382 Road 3100
Aztec, NM 87410

**Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.**

Dear Ms. Montano,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Sullivan Gas Com D #1E, Davis Gas Com F #1E, Davis Gas Com F #1R, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

December 10, 2015

**VIA CERTIFIED MAIL**

Attn: Regulatory Coordinator
Holcomb Oil & Gas Inc.
512 W. Arrington
Farmington, NM 87402

**Re: Application of Western Refining Southwest, Inc. for Authorization to Inject in the proposed SWD #2, San Juan, New Mexico.**

Dear Mr. Holcomb,

Western Refining Southwest, Inc. has applied to the New Mexico Oil Conservation Division to dispose of non-hazardous treated water generated from the Bloomfield Terminal (former Refinery) into the Entrada formation in the proposed SWD #2. The SWD #2 will be located 2019' feet from the North line and 110' feet from the East in Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico. As an offset operator of the Davis Com J#1, Jacque #1, Jacque #2, all of which are within a half mile of the proposed SWD #2, you are being notified of this application pursuant to NMOCD rules

If you have no objection to this Application then no further action is required on your part. If you would like to file an objection or to request a hearing please notify the NMOCD at 1220 South St. Francis, St., Santa Fe, NM 87505 within 20 days of receipt of this notice.

If you have any questions or need additional information please feel free to call me at (505) 327-4892.

Sincerely,

John Thompson
Walsh Engineering & Production
Agent/Engineer for Western Refining Southwest

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Burlington Resources Oil & Gas
Attn: Crystal Walker
3401 E. 30th St.
Farmington, NM 87401

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature
X Judith Dee ☒ Agent ☐ Addressee

B. Received by (Printed Name) Judith Dee
C. Date of Delivery 12-17-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4465

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

XTO Energy, Inc
Attn: Diane Montano
382 Rd. 3100
Aztec, NM 87410

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature
X Reuel S. Mendias ☐ Agent ☐ Addressee

B. Received by (Printed Name) Reuel S. Mendias
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

DEC 17 2015

3. Service Type
☐ Certified Mail ☐ Express Mail
☒ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7011 1570 0001 0594 4441

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

**SENDER: COMPLETE THIS SECTION**

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Holcomb Oil & Gas Inc
Attn: Regulatory Coordinator
512 W. Arrington
Farmington NM 87401

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature
X
☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

FARMINGTON NM
DEC 17 2015
07:31

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
*(Transfer from service label)* 7011 1570 0001 0594 4458

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

# Appendix C
# Injection Fluid Analytical

*Table 3*

## Injection Well
## 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| Volatile Organic Compounds *(ug/L)* | | 1/23/2014 | | 7/28/2014 | 10/1/2014 |
| 1,1,1,2-Tetrachloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1,1-Trichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | | < 20 | na | < 4.0 | < 10 |
| 1,1,2-Trichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloroethane | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloroethene | | < 10 | na | < 2.0 | < 5.0 |
| 1,1-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,3-Trichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,3-Trichloropropane | | < 20 | na | < 4.0 | < 10 |
| 1,2,4-Trichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2,4-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dibromo-3-chloropropane | | < 20 | na | < 4.0 | < 10 |
| 1,2-Dibromoethane (EDB) | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloroethane (EDC) | 500 | < 10 | na | < 2.0 | < 5.0 |
| 1,2-Dichloropropane | | < 10 | na | < 2.0 | < 5.0 |
| 1,3,5-Trimethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichlorobenzene | | < 10 | na | < 2.0 | < 5.0 |
| 1,3-Dichloropropane | | < 10 | na | < 2.0 | < 5.0 |
| 1,4-Dichlorobenzene | 7500 | < 10 | na | < 2.0 | < 5.0 |
| 1-Methylnaphthalene | | < 40 | na | < 8.0 | < 20 |
| 2,2-Dichloropropane | | < 20 | na | < 4.0 | < 10 |
| 2-Butanone | | 200 | na | < 20 | < 50 |
| 2-Chlorotoluene | | < 10 | na | < 2.0 | < 5.0 |
| 2-Hexanone | | < 100 | na | < 20 | < 50 |
| 2-Methylnaphthalene | | < 40 | na | < 8.0 | < 20 |
| 4-Chlorotoluene | | < 10 | na | < 2.0 | < 5.0 |
| 4-Isopropyltoluene | | < 10 | na | < 2.0 | < 5.0 |
| 4-Methyl-2-pentanone | | < 100 | na | < 20 | < 50 |
| Acetone | | 1400 | na | 85 | 120 |
| Benzene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Bromobenzene | | < 10 | na | < 2.0 | < 5.0 |
| Bromodichloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Bromoform | | < 10 | na | < 2.0 | < 5.0 |
| Bromomethane | | < 30 | na | < 6.0 | < 15 |
| Carbon disulfide | | < 100 | na | < 20 | < 50 |
| Carbon Tetrachloride | 500 | < 10 | na | < 2.0 | < 5.0 |
| Chlorobenzene | 100000 | < 10 | na | < 2.0 | < 5.0 |
| Chloroethane | | < 20 | na | < 4.0 | < 10 |
| Chloroform | 6000 | < 10 | na | < 2.0 | < 5.0 |
| Chloromethane | | < 30 | na | < 6.0 | < 15 |
| cis-1,2-DCE | | < 10 | na | < 2.0 | < 5.0 |
| cis-1,3-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| Dibromochloromethane | | < 10 | na | < 2.0 | < 5.0 |
| Dibromomethane | | < 10 | na | < 2.0 | < 5.0 |
| Dichlorodifluoromethane | | < 10 | na | < 2.0 | < 5.0 |
| Ethylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Hexachlorobutadiene | 500 | < 10 | na | < 2.0 | < 5.0 |
| Isopropylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Methyl tert-butyl ether (MTBE) | | < 10 | na | < 2.0 | < 5.0 |
| Methylene Chloride | | < 30 | na | < 6.0 | < 15 |
| Naphthalene | | < 30 | na | < 4.0 | < 10 |
| n-Butylbenzene | | < 10 | na | < 6.0 | < 15 |
| n-Propylbenzene | | < 20 | na | < 2.0 | < 5.0 |
| sec-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Styrene | | < 10 | na | < 2.0 | < 5.0 |
| tert-Butylbenzene | | < 10 | na | < 2.0 | < 5.0 |
| Tetrachloroethene (PCE) | | < 10 | na | < 2.0 | < 5.0 |
| Toluene | | < 10 | na | < 2.0 | < 5.0 |
| trans-1,2-DCE | | < 10 | na | < 2.0 | < 5.0 |
| trans-1,3-Dichloropropene | | < 10 | na | < 2.0 | < 5.0 |
| Trichloroethene (TCE) | | < 10 | na | < 2.0 | < 5.0 |
| Trichlorofluoromethane | | < 10 | na | < 2.0 | < 5.0 |
| Vinyl chloride | 200 | < 10 | na | < 2.0 | < 5.0 |
| Xylenes, Total | | < 15 | na | < 3.0 | < 7.5 |

## Table 3

## Injection Well
## 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| **Semi-Volatile Organic Compounds *(ug/L)*** | | | | | |
| 1,2,4-Trichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,2-Dichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,3-Dichlorobenzene | | < 50 | na | < 100 | < 10 |
| 1,4-Dichlorobenzene | 7500 | < 50 | na | < 100 | < 10 |
| 1-Methylnaphthalene | | < 50 | na | < 100 | < 10 |
| 2,4,5-Trichlorophenol | | < 50 | na | < 100 | < 10 |
| 2,4,6-Trichlorophenol | 2000 | < 50 | na | < 100 | < 10 |
| 2,4-Dichlorophenol | | < 100 | na | < 200 | < 20 |
| 2,4-Dimethylphenol | | < 50 | na | < 100 | < 10 |
| 2,4-Dinitrophenol | | < 100 | na | < 200 | < 20 |
| 2,4-Dinitrotoluene | 130 | < 50 | na | < 100 | < 10 |
| 2,6-Dinitrotoluene | | < 50 | na | < 100 | < 10 |
| 2-Chloronaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Chlorophenol | | < 50 | na | < 100 | < 10 |
| 2-Methylnaphthalene | | < 50 | na | < 100 | < 10 |
| 2-Methylphenol | | < 50 | na | < 200 | < 20 |
| 2-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 2-Nitrophenol | | < 50 | na | < 100 | < 10 |
| 3,3'-Dichlorobenzidine | | < 50 | na | 210 | < 10 |
| 3+4-Methylphenol | | < 50 | na | < 100 | < 10 |
| 3-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 4,6-Dinitro-2-methylphenol | | < 100 | na | < 200 | < 20 |
| 4-Bromophenyl phenyl ether | | < 50 | na | < 100 | < 10 |
| 4-Chloro-3-methylphenol | | < 50 | na | < 100 | < 10 |
| 4-Chloroaniline | | < 50 | na | < 100 | < 10 |
| 4-Chlorophenyl phenyl ether | | < 50 | na | < 100 | < 10 |
| 4-Nitroaniline | | < 50 | na | < 100 | < 10 |
| 4-Nitrophenol | | < 50 | na | < 100 | < 10 |
| Acenaphthene | | < 50 | na | < 100 | < 10 |
| Acenaphthylene | | < 50 | na | < 100 | < 10 |
| Aniline | | < 50 | na | < 100 | < 10 |
| Anthracene | | < 50 | na | < 100 | < 10 |
| Azobenzene | | < 50 | na | < 100 | < 10 |
| Benz(a)anthracene | | < 50 | na | < 100 | < 10 |
| Benzo(a)pyrene | | < 50 | na | < 100 | < 10 |
| Benzo(b)fluoranthene | | < 50 | na | < 100 | < 10 |
| Benzo(g,h,i)perylene | | < 50 | na | < 100 | < 10 |
| Benzo(k)fluoranthene | | < 50 | na | < 100 | < 10 |
| Benzoic acid | | < 100 | na | < 200 | < 40 |
| Benzyl alcohol | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethoxy)methane | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroethyl)ether | | < 50 | na | < 100 | < 10 |
| Bis(2-chloroisopropyl)ether | | < 50 | na | < 100 | < 10 |
| Bis(2-ethylhexyl)phthalate | | < 50 | na | < 100 | < 10 |
| Butyl benzyl phthalate | | < 50 | na | < 100 | < 10 |
| Carbazole | | < 50 | na | < 100 | < 10 |
| Chrysene | | < 50 | na | < 100 | < 10 |
| Dibenz(a,h)anthracene | | < 50 | na | < 100 | < 10 |
| Dibenzofuran | | < 50 | na | < 100 | < 10 |
| Diethyl phthalate | | < 50 | na | < 100 | < 10 |
| Dimethyl phthalate | | < 50 | na | < 100 | < 10 |
| Di-n-butyl phthalate | | < 50 | na | < 100 | < 10 |
| Di-n-octyl phthalate | | < 50 | na | < 100 | < 20 |
| Fluoranthene | | < 50 | na | < 100 | < 10 |
| Fluorene | | < 50 | na | < 100 | < 10 |
| Hexachlorobenzene | *130* | *< 50* | *na* | *< 100* | *< 10* |
| Hexachlorobutadiene | 500 | < 50 | na | < 100 | < 10 |
| Hexachlorocyclopentadiene | | < 50 | na | < 100 | < 10 |
| Hexachloroethane | 3000 | < 50 | na | < 100 | < 10 |
| Indeno(1,2,3-cd)pyrene | | < 50 | na | < 100 | < 10 |
| Isophorone | | < 50 | na | < 100 | < 10 |
| *Naphthalene* | | *< 50* | *na* | *< 100* | *< 10* |
| Nitrobenzene | 2000 | < 50 | na | < 100 | < 10 |
| N-Nitrosodimethylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodi-n-propylamine | | < 50 | na | < 100 | < 10 |
| N-Nitrosodiphenylamine | | < 50 | na | < 100 | < 10 |
| Pentachlorophenol | 100000 | < 100 | na | < 200 | < 20 |
| *Phenanthrene* | | *< 50* | *na* | *< 100* | *< 10* |
| Phenol | | < 50 | na | < 100 | < 10 |
| Pyrene | | < 50 | na | < 100 | < 10 |
| Pyridine | 5000 | < 50 | na | < 100 | < 10 |

## Table 3

## Injection Well
## 2014 Quarterly Analytical Summary

| | Toxicity Characteristics | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| **General Chemistry** *(mg/L unless otherwise stated)* | | | | | |
| *Specific Conductance (umhos/cm)* | | 7100 | *na* | 1900 | 1100 |
| Chloride | | 2400 | na | 510 | 220 |
| Sulfate | | 35 | na | 41 | 26 |
| Total Dissolved Solids | | 5240 | na | 1380 | 742 |
| pH *(pH Units)* | | 6.25 | na | 7.10 | 7.08 |
| Bicarbonate (As CaCO3) | | 380 | na | 220 | 150 |
| Carbonate (As CaCO3) | | <2.0 | na | <2.0 | <2.0 |
| Calcium | | 490 | na | 480 | 110 |
| Magnesium | | 75 | na | 99 | 23 |
| *Potassium* | | 37 | *na* | 36 | 8.2 |
| Sodium | | 1000 | na | 1100 | 220 |
| Total Alkalinity (as CaCO3) | | 380 | na | 220 | 150 |
| **Total Metals** *(mg/L)* | | | | | |
| Arsenic | 5.0 | < 0.020 | na | < 0.020 | < 0.020 |
| Barium | 100.0 | 0.56 | na | 0.63 | 0.20 |
| Cadmium | 1.0 | < 0.0020 | na | < 0.0020 | < 0.0020 |
| Chromium | 5.0 | < 0.0060 | na | < 0.0060 | < 0.0060 |
| Lead | 5 | < 0.0050 | na | < 0.0050 | < 0.0050 |
| *Selenium* | 1 | *< 0.050* | *na* | *< 0.050* | *< 0.050* |
| Silver | 5 | < 0.0050 | na | < 0.0050 | < 0.0050 |
| Mercury | 0.2 | < 0.0010 | na | < 0.00020 | < 0.00020 |
| **Ignitability, Corrosivity, and Reactivity** | | | | | |
| Reactive Cyanide *(mg/L)* | | <1.0 | na | <1.0 | <1.0 |
| Reactive Sulfide *(mg/kg)* | | 1.6 | na | <1.0 | 3.0 |
| Ignitability *(° f)* | < 140° F | >200 | na | >200 | >200 |
| Corrosivity (ph Units) | ≤ 2 or ≥ 12.5 | 6.25 | na | 7.44 | 6.82 |

Notes:

na = A water sample was not collected during the 2nd quarter of 2014 because the well was not operational.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

February 13, 2014

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Injection Well 1-23-2014 OrderNo.: 1401A07

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
**Lab ID:** 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JRR** | |
| Chloride | 2400 | 100 | | mg/L | 200 | 1/27/2014 7:14:18 PM | R16337 |
| Sulfate | 35 | 5.0 | | mg/L | 10 | 1/24/2014 8:01:43 PM | R16313 |
| **EPA METHOD 7470: MERCURY** | | | | | | Analyst: **DBD** | |
| Mercury | ND | 0.0010 | | mg/L | 5 | 1/30/2014 1:52:43 PM | 11463 |
| **EPA 6010B: TOTAL RECOVERABLE METALS** | | | | | | Analyst: **ELS** | |
| Arsenic | ND | 0.020 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Barium | 0.56 | 0.020 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Cadmium | ND | 0.0020 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Calcium | 490 | 5.0 | | mg/L | 5 | 1/29/2014 11:22:17 AM | 11432 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Lead | ND | 0.0050 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Magnesium | 75 | 1.0 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Potassium | 37 | 1.0 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Selenium | ND | 0.050 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Silver | ND | 0.0050 | | mg/L | 1 | 1/29/2014 11:20:46 AM | 11432 |
| Sodium | 1000 | 20 | | mg/L | 20 | 1/29/2014 11:50:27 AM | 11432 |
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Acenaphthene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Acenaphthylene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Aniline | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Anthracene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Azobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benz(a)anthracene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzo(a)pyrene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzo(b)fluoranthene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzo(g,h,i)perylene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzo(k)fluoranthene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzoic acid | ND | 100 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Benzyl alcohol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chloroethoxy)methane | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chloroethyl)ether | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-chloroisopropyl)ether | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Bis(2-ethylhexyl)phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Bromophenyl phenyl ether | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Butyl benzyl phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Carbazole | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Chloro-3-methylphenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Chloroaniline | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
**Lab ID:** 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| 2-Chloronaphthalene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Chlorophenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Chlorophenyl phenyl ether | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Chrysene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Di-n-butyl phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Di-n-octyl phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Dibenz(a,h)anthracene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Dibenzofuran | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,2-Dichlorobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,3-Dichlorobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,4-Dichlorobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3,3'-Dichlorobenzidine | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Diethyl phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Dimethyl phthalate | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dichlorophenol | ND | 100 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dimethylphenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4,6-Dinitro-2-methylphenol | ND | 100 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dinitrophenol | ND | 100 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4-Dinitrotoluene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,6-Dinitrotoluene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Fluoranthene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Fluorene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachlorobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachlorobutadiene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachlorocyclopentadiene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Hexachloroethane | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Isophorone | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1-Methylnaphthalene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Methylnaphthalene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Methylphenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3+4-Methylphenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitrosodi-n-propylamine | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitrosodimethylamine | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| N-Nitrosodiphenylamine | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Naphthalene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Nitroaniline | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 3-Nitroaniline | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Nitroaniline | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 1-23-2014 **Collection Date:** 1/23/2014 8:35:00 AM
**Lab ID:** 1401A07-001 **Matrix:** AQUEOUS **Received Date:** 1/24/2014 10:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Nitrobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2-Nitrophenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 4-Nitrophenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Pentachlorophenol | ND | 100 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Phenanthrene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Phenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Pyrene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Pyridine | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 1,2,4-Trichlorobenzene | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4,5-Trichlorophenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| 2,4,6-Trichlorophenol | ND | 50 | | µg/L | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: 2-Fluorophenol | 66.2 | 22.7-98 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: Phenol-d5 | 54.5 | 23.4-74.9 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: 2,4,6-Tribromophenol | 97.6 | 23.3-111 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: Nitrobenzene-d5 | 86.5 | 36.8-111 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: 2-Fluorobiphenyl | 86.4 | 38.3-110 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| Surr: 4-Terphenyl-d14 | 73.7 | 52.1-116 | | %REC | 1 | 1/30/2014 7:14:30 PM | 11420 |
| ***EPA METHOD 8260B: VOLATILES*** | | | | | | Analyst: ***DJF*** | |
| Benzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Toluene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Ethylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Methyl tert-butyl ether (MTBE) | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,4-Trimethylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,3,5-Trimethylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dichloroethane (EDC) | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dibromoethane (EDB) | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Naphthalene | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1-Methylnaphthalene | ND | 40 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Methylnaphthalene | ND | 40 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Acetone | 1400 | 100 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Bromobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Bromodichloromethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Bromoform | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Bromomethane | ND | 30 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Butanone | 200 | 100 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Carbon disulfide | ND | 100 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Carbon Tetrachloride | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Chlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Chloroethane | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Project:** Injection Well 1-23-2014
**Lab ID:** 1401A07-001 **Matrix:** AQUEOUS

**Client Sample ID:** Injection Well
**Collection Date:** 1/23/2014 8:35:00 AM
**Received Date:** 1/24/2014 10:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **DJF** | |
| Chloroform | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Chloromethane | ND | 30 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Chlorotoluene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Chlorotoluene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| cis-1,2-DCE | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| cis-1,3-Dichloropropene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dibromo-3-chloropropane | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dibromochloromethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dibromomethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dichlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,3-Dichlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,4-Dichlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Dichlorodifluoromethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dichloroethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dichloroethene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2-Dichloropropane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,3-Dichloropropane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2,2-Dichloropropane | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1-Dichloropropene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Hexachlorobutadiene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 2-Hexanone | ND | 100 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Isopropylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Isopropyltoluene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 4-Methyl-2-pentanone | ND | 100 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Methylene Chloride | ND | 30 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| n-Butylbenzene | ND | 30 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| n-Propylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| sec-Butylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Styrene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| tert-Butylbenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,1,2-Tetrachloroethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,2,2-Tetrachloroethane | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Tetrachloroethene (PCE) | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| trans-1,2-DCE | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| trans-1,3-Dichloropropene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,3-Trichlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,4-Trichlorobenzene | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,1-Trichloroethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,1,2-Trichloroethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** Injection Well
**Project:** Injection Well 1-23-2014
**Collection Date:** 1/23/2014 8:35:00 AM
**Lab ID:** 1401A07-001
**Matrix:** AQUEOUS
**Received Date:** 1/24/2014 10:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **DJF** | |
| Trichloroethene (TCE) | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Trichlorofluoromethane | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| 1,2,3-Trichloropropane | ND | 20 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Vinyl chloride | ND | 10 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Xylenes, Total | ND | 15 | | µg/L | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Surr: 1,2-Dichloroethane-d4 | 100 | 70-130 | | %REC | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Surr: 4-Bromofluorobenzene | 86.4 | 70-130 | | %REC | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Surr: Dibromofluoromethane | 98.8 | 70-130 | | %REC | 10 | 1/31/2014 3:25:28 PM | R16441 |
| Surr: Toluene-d8 | 101 | 70-130 | | %REC | 10 | 1/31/2014 3:25:28 PM | R16441 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **SRM** | |
| Conductivity | 7100 | 0.010 | | µmhos/cm | 1 | 1/24/2014 5:53:17 PM | R16304 |
| **SM4500-H+B: PH** | | | | | | Analyst: **SRM** | |
| pH | 6.25 | 1.68 | H | pH units | 1 | 1/24/2014 5:53:17 PM | R16304 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **SRM** | |
| Bicarbonate (As CaCO3) | 380 | 20 | | mg/L CaCO3 | 1 | 1/24/2014 5:53:17 PM | R16304 |
| Carbonate (As CaCO3) | ND | 2.0 | | mg/L CaCO3 | 1 | 1/24/2014 5:53:17 PM | R16304 |
| Total Alkalinity (as CaCO3) | 380 | 20 | | mg/L CaCO3 | 1 | 1/24/2014 5:53:17 PM | R16304 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 5240 | 100 | * | mg/L | 1 | 1/28/2014 5:33:00 PM | 11406 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# *Anatek Labs, Inc.*

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

| | | | |
|---|---|---|---|
| **Client:** | HALL ENVIRONMENTAL ANALYSIS LAB | **Batch #:** | 140128036 |
| **Address:** | 4901 HAWKINS NE SUITE D<br>ALBUQUERQUE, NM 87109 | **Project Name:** | 1401A07 |
| **Attn:** | ANDY FREEMAN | | |

## Analytical Results Report

| | | | | | |
|---|---|---|---|---|---|
| **Sample Number** | 140128036-001 | **Sampling Date** | 1/23/2014 | **Date/Time Received** | 1/28/2014 12:18 PM |
| **Client Sample ID** | 1401A07-001E / INJECTION WELL | | | **Sampling Time** | 8:35 AM |
| **Matrix** | Water | **Sample Location** | | | |
| **Comments** | | | | | |

| Parameter | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
|---|---|---|---|---|---|---|---|
| Cyanide (reactive) | ND | mg/L | 1 | 2/12/2014 | CRW | SW846 CH7 | |
| Flashpoint | >200 | °F | | 2/4/2014 | KFG | EPA 1010 | |
| pH | 5.89 | ph Units | | 1/31/2014 | AJT | EPA 150.1 | |
| Reactive sulfide | 1.57 | mg/L | 1 | 1/29/2014 | AJT | SW846 CH7 | |

*Authorized Signature*

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit


The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0085; FL(NELAP): E871099

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R16313** | RunNo: **16313** |
| Prep Date: | Analysis Date: **1/24/2014** | SeqNo: **470380** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R16313** | RunNo: **16313** |
| Prep Date: | Analysis Date: **1/24/2014** | SeqNo: **470381** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.6 | 0.50 | 10.00 | 0 | 96.0 | 90 | 110 | | | |

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R16337** | RunNo: **16337** |
| Prep Date: | Analysis Date: **1/27/2014** | SeqNo: **471000** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R16337** | RunNo: **16337** |
| Prep Date: | Analysis Date: **1/27/2014** | SeqNo: **471001** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.6 | 0.50 | 5.000 | 0 | 92.6 | 90 | 110 | | | |

**Qualifiers:**

- * *Value exceeds Maximum Contaminant Level.*
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B *Analyte detected in the associated Method Blank*
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID **5ml rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R16441** | RunNo: **16441** |
| Prep Date: | Analysis Date: **1/31/2014** | SeqNo: **474209** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |

*Qualifiers:*

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1401A07

13-Feb-14

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID 5ml rb | SampType: MBLK | TestCode: EPA Method 8260B: VOLATILES |
|---|---|---|
| Client ID: PBW | Batch ID: R16441 | RunNo: 16441 |
| Prep Date: | Analysis Date: 1/31/2014 | SeqNo: 474209 Units: µg/L |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 8.4 | | 10.00 | | 84.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 9.3 | | 10.00 | | 93.4 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.3 | | 10.00 | | 93.0 | 70 | 130 | | | |

| Sample ID 100ng lcs | SampType: LCS | TestCode: EPA Method 8260B: VOLATILES |
|---|---|---|
| Client ID: LCSW | Batch ID: R16441 | RunNo: 16441 |
| Prep Date: | Analysis Date: 1/31/2014 | SeqNo: 474213 Units: µg/L |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 21 | 1.0 | 20.00 | 0 | 107 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 101 | 82.2 | 124 | | | |
| Chlorobenzene | 18 | 1.0 | 20.00 | 0 | 92.5 | 70 | 130 | | | |

**Qualifiers:**

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- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID **100ng lcs** | SampType: **LCS** | | | TestCode: **EPA Method 8260B: VOLATILES** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R16441** | | | RunNo: **16441** | | | | | | |
| Prep Date: | Analysis Date: **1/31/2014** | | | SeqNo: **474213** | | Units: **µg/L** | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| 1,1-Dichloroethene | 24 | 1.0 | 20.00 | 0 | 119 | 83.5 | 155 | | | |
| Trichloroethene (TCE) | 19 | 1.0 | 20.00 | 0 | 93.4 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 100 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 8.8 | | 10.00 | | 88.1 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 8.1 | | 10.00 | | 80.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10 | | 10.00 | | 101 | 70 | 130 | | | |

**Qualifiers:**

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- P Sample pH greater than 2.
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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID **mb-11420** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **11420** | RunNo: **16402** |
| Prep Date: **1/27/2014** | Analysis Date: **1/30/2014** | SeqNo: **473422** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 10 | | | | | | | | |
| Acenaphthylene | ND | 10 | | | | | | | | |
| Aniline | ND | 10 | | | | | | | | |
| Anthracene | ND | 10 | | | | | | | | |
| Azobenzene | ND | 10 | | | | | | | | |
| Benz(a)anthracene | ND | 10 | | | | | | | | |
| Benzo(a)pyrene | ND | 10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 10 | | | | | | | | |
| Benzoic acid | ND | 20 | | | | | | | | |
| Benzyl alcohol | ND | 10 | | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 10 | | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 10 | | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 10 | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | ND | 10 | | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 10 | | | | | | | | |
| Butyl benzyl phthalate | ND | 10 | | | | | | | | |
| Carbazole | ND | 10 | | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 10 | | | | | | | | |
| 4-Chloroaniline | ND | 10 | | | | | | | | |
| 2-Chloronaphthalene | ND | 10 | | | | | | | | |
| 2-Chlorophenol | ND | 10 | | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 10 | | | | | | | | |
| Chrysene | ND | 10 | | | | | | | | |
| Di-n-butyl phthalate | ND | 10 | | | | | | | | |
| Di-n-octyl phthalate | ND | 10 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 10 | | | | | | | | |
| Dibenzofuran | ND | 10 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 10 | | | | | | | | |
| 3,3'-Dichlorobenzidine | ND | 10 | | | | | | | | |
| Diethyl phthalate | ND | 10 | | | | | | | | |
| Dimethyl phthalate | ND | 10 | | | | | | | | |
| 2,4-Dichlorophenol | ND | 20 | | | | | | | | |
| 2,4-Dimethylphenol | ND | 10 | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 20 | | | | | | | | |
| 2,4-Dinitrophenol | ND | 20 | | | | | | | | |

**Qualifiers:**

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- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| | | | |
|---|---|---|---|
| Sample ID **mb-11420** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** | |
| Client ID: **PBW** | Batch ID: **11420** | RunNo: **16402** | |
| Prep Date: **1/27/2014** | Analysis Date: **1/30/2014** | SeqNo: **473422** | Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | ND | 10 | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 10 | | | | | | | | |
| Fluoranthene | ND | 10 | | | | | | | | |
| Fluorene | ND | 10 | | | | | | | | |
| Hexachlorobenzene | ND | 10 | | | | | | | | |
| Hexachlorobutadiene | ND | 10 | | | | | | | | |
| Hexachlorocyclopentadiene | ND | 10 | | | | | | | | |
| Hexachloroethane | ND | 10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 10 | | | | | | | | |
| Isophorone | ND | 10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 2-Methylphenol | ND | 10 | | | | | | | | |
| 3+4-Methylphenol | ND | 10 | | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 10 | | | | | | | | |
| N-Nitrosodimethylamine | ND | 10 | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 10 | | | | | | | | |
| Naphthalene | ND | 10 | | | | | | | | |
| 2-Nitroaniline | ND | 10 | | | | | | | | |
| 3-Nitroaniline | ND | 10 | | | | | | | | |
| 4-Nitroaniline | ND | 10 | | | | | | | | |
| Nitrobenzene | ND | 10 | | | | | | | | |
| 2-Nitrophenol | ND | 10 | | | | | | | | |
| 4-Nitrophenol | ND | 10 | | | | | | | | |
| Pentachlorophenol | ND | 20 | | | | | | | | |
| Phenanthrene | ND | 10 | | | | | | | | |
| Phenol | ND | 10 | | | | | | | | |
| Pyrene | ND | 10 | | | | | | | | |
| Pyridine | ND | 10 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 10 | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 10 | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | | | | | | | | |
| Surr: 2-Fluorophenol | 120 | | 200.0 | | 60.4 | 22.7 | 98 | | | |
| Surr: Phenol-d5 | 91 | | 200.0 | | 45.4 | 23.4 | 74.9 | | | |
| Surr: 2,4,6-Tribromophenol | 150 | | 200.0 | | 74.9 | 23.3 | 111 | | | |
| Surr: Nitrobenzene-d5 | 81 | | 100.0 | | 80.7 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 77 | | 100.0 | | 76.6 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 74 | | 100.0 | | 73.9 | 52.1 | 116 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J *Analyte detected below quantitation limits*
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

WO#: 1401A07

## Hall Environmental Analysis Laboratory, Inc.

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID lcs-11420 | SampType: LCS | TestCode: EPA Method 8270C: Semivolatiles | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: LCSW | Batch ID: 11420 | RunNo: 16402 | | | | | | | |
| Prep Date: 1/27/2014 | Analysis Date: 1/30/2014 | SeqNo: 473423 | Units: µg/L | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Acenaphthene | 72 | 10 | 100.0 | 0 | 72.4 | 48 | 101 | | | |
| 4-Chloro-3-methylphenol | 130 | 10 | 200.0 | 0 | 67.2 | 47.9 | 109 | | | |
| 2-Chlorophenol | 70 | 10 | 200.0 | 0 | 35.0 | 40 | 105 | | | S |
| 1,4-Dichlorobenzene | 60 | 10 | 100.0 | 0 | 60.3 | 40.8 | 94.3 | | | |
| 2,4-Dinitrotoluene | 63 | 10 | 100.0 | 0 | 63.2 | 28.3 | 131 | | | |
| N-Nitrosodi-n-propylamine | 80 | 10 | 100.0 | 0 | 79.7 | 46.2 | 119 | | | |
| 4-Nitrophenol | 16 | 10 | 200.0 | 0 | 8.02 | 10.5 | 67.9 | | | S |
| Pentachlorophenol | 31 | 20 | 200.0 | 0 | 15.5 | 22.4 | 81.1 | | | S |
| Phenol | 67 | 10 | 200.0 | 0 | 33.4 | 21.4 | 72.9 | | | |
| Pyrene | 66 | 10 | 100.0 | 0 | 65.9 | 46.9 | 109 | | | |
| 1,2,4-Trichlorobenzene | 68 | 10 | 100.0 | 0 | 67.8 | 43.1 | 98.4 | | | |
| Surr: 2-Fluorophenol | 36 | | 200.0 | | 18.0 | 22.7 | 98 | | | S |
| Surr: Phenol-d5 | 65 | | 200.0 | | 32.3 | 23.4 | 74.9 | | | |
| Surr: 2,4,6-Tribromophenol | 72 | | 200.0 | | 36.2 | 23.3 | 111 | | | |
| Surr: Nitrobenzene-d5 | 74 | | 100.0 | | 73.5 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 74 | | 100.0 | | 73.9 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 80 | | 100.0 | | 80.0 | 52.1 | 116 | | | |

| Sample ID mb-11513 | SampType: MBLK | TestCode: EPA Method 8270C: Semivolatiles | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: PBW | Batch ID: 11513 | RunNo: 16496 | | | | | | | |
| Prep Date: 1/31/2014 | Analysis Date: 2/3/2014 | SeqNo: 475097 | Units: %REC | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 2-Fluorophenol | 110 | | 200.0 | | 54.9 | 22.7 | 98 | | | |
| Surr: Phenol-d5 | 93 | | 200.0 | | 46.5 | 23.4 | 74.9 | | | |
| Surr: 2,4,6-Tribromophenol | 130 | | 200.0 | | 65.6 | 23.3 | 111 | | | |
| Surr: Nitrobenzene-d5 | 77 | | 100.0 | | 77.3 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 71 | | 100.0 | | 70.6 | 38.3 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 72 | | 100.0 | | 71.6 | 52.1 | 116 | | | |

| Sample ID lcs-11513 | SampType: LCS | TestCode: EPA Method 8270C: Semivolatiles | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: LCSW | Batch ID: 11513 | RunNo: 16496 | | | | | | | |
| Prep Date: 1/31/2014 | Analysis Date: 2/3/2014 | SeqNo: 475098 | Units: %REC | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 2-Fluorophenol | 100 | | 200.0 | | 49.8 | 22.7 | 98 | | | |
| Surr: Phenol-d5 | 85 | | 200.0 | | 42.3 | 23.4 | 74.9 | | | |
| Surr: 2,4,6-Tribromophenol | 150 | | 200.0 | | 77.3 | 23.3 | 111 | | | |
| Surr: Nitrobenzene-d5 | 82 | | 100.0 | | 81.7 | 36.8 | 111 | | | |
| Surr: 2-Fluorobiphenyl | 79 | | 100.0 | | 78.7 | 38.3 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1401A07

13-Feb-14

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID | lcs-11513 | SampType: | LCS | TestCode: | EPA Method 8270C: Semivolatiles | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 11513 | RunNo: | 16496 | | | | | |
| Prep Date: | 1/31/2014 | Analysis Date: | 2/3/2014 | SeqNo: | 475098 | Units: | %REC | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Terphenyl-d14 | 61 | | 100.0 | | 61.4 | 52.1 | 116 | | | |

| Sample ID | lcsd-11513 | SampType: | LCSD | TestCode: | EPA Method 8270C: Semivolatiles | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSS02 | Batch ID: | 11513 | RunNo: | 16496 | | | | | |
| Prep Date: | 1/31/2014 | Analysis Date: | 2/3/2014 | SeqNo: | 475099 | Units: | %REC | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2-Fluorophenol | 110 | | 200.0 | | 54.1 | 22.7 | 98 | 0 | 0 | |
| Surr: Phenol-d5 | 90 | | 200.0 | | 44.9 | 23.4 | 74.9 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 160 | | 200.0 | | 79.0 | 23.3 | 111 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 89 | | 100.0 | | 88.8 | 36.8 | 111 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 83 | | 100.0 | | 83.1 | 38.3 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 70 | | 100.0 | | 70.1 | 52.1 | 116 | 0 | 0 | |

**Qualifiers:**

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O *RSD is greater than RSDlimit*
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P *Sample pH greater than 2.*
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1401A07

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID | MB-11463 | SampType: | MBLK | | TestCode: | EPA Method 7470: Mercury | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 11463 | | RunNo: | 16401 | | | | |
| Prep Date: | 1/29/2014 | Analysis Date: | 1/30/2014 | | SeqNo: | 473049 | Units: | mg/L | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID | LCS-11463 | SampType: | LCS | | TestCode: | EPA Method 7470: Mercury | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 11463 | | RunNo: | 16401 | | | | |
| Prep Date: | 1/29/2014 | Analysis Date: | 1/30/2014 | | SeqNo: | 473050 | Units: | mg/L | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | 0.0047 | 0.00020 | 0.005000 | 0 | 94.3 | 80 | 120 | | | |

| Sample ID | 1401A07-001CMS | SampType: | MS | | TestCode: | EPA Method 7470: Mercury | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Injection Well | Batch ID: | 11463 | | RunNo: | 16401 | | | | |
| Prep Date: | 1/29/2014 | Analysis Date: | 1/30/2014 | | SeqNo: | 473069 | Units: | mg/L | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | 0.0046 | 0.0010 | 0.005000 | 0 | 91.0 | 75 | 125 | | | |

| Sample ID | 1401A07-001CMSD | SampType: | MSD | | TestCode: | EPA Method 7470: Mercury | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Injection Well | Batch ID: | 11463 | | RunNo: | 16401 | | | | |
| Prep Date: | 1/29/2014 | Analysis Date: | 1/30/2014 | | SeqNo: | 473070 | Units: | mg/L | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | 0.0045 | 0.0010 | 0.005000 | 0 | 90.1 | 75 | 125 | 1.02 | 20 | |

**Qualifiers:**

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- E *Value above quantitation range*
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- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H *Holding times for preparation or analysis exceeded*
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL *Reporting Detection Limit*

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

Sample ID **MB-11432** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **11432** RunNo: **16372**

Prep Date: **1/28/2014** Analysis Date: **1/29/2014** SeqNo: **472096** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.020 | | | | | | | | |
| Barium | ND | 0.020 | | | | | | | | |
| Cadmium | ND | 0.0020 | | | | | | | | |
| Calcium | ND | 1.0 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Lead | ND | 0.0050 | | | | | | | | |
| Magnesium | ND | 1.0 | | | | | | | | |
| Potassium | ND | 1.0 | | | | | | | | |
| Selenium | ND | 0.050 | | | | | | | | |
| Silver | ND | 0.0050 | | | | | | | | |
| Sodium | ND | 1.0 | | | | | | | | |

Sample ID **LCS-11432** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **11432** RunNo: **16372**

Prep Date: **1/28/2014** Analysis Date: **1/29/2014** SeqNo: **472097** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.43 | 0.020 | 0.5000 | 0 | 85.6 | 80 | 120 | | | |
| Barium | 0.43 | 0.020 | 0.5000 | 0 | 85.5 | 80 | 120 | | | |
| Cadmium | 0.42 | 0.0020 | 0.5000 | 0 | 84.3 | 80 | 120 | | | |
| Calcium | 45 | 1.0 | 50.00 | 0 | 89.1 | 80 | 120 | | | |
| Chromium | 0.43 | 0.0060 | 0.5000 | 0 | 85.3 | 80 | 120 | | | |
| Lead | 0.42 | 0.0050 | 0.5000 | 0 | 84.4 | 80 | 120 | | | |
| Magnesium | 45 | 1.0 | 50.00 | 0 | 90.0 | 80 | 120 | | | |
| Potassium | 44 | 1.0 | 50.00 | 0 | 88.6 | 80 | 120 | | | |
| Selenium | 0.42 | 0.050 | 0.5000 | 0 | 83.4 | 80 | 120 | | | |
| Silver | 0.089 | 0.0050 | 0.1000 | 0 | 88.7 | 80 | 120 | | | |
| Sodium | 45 | 1.0 | 50.00 | 0 | 89.3 | 80 | 120 | | | |

**Qualifiers:**

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- B Analyte detected in the associated Method Blank
- E Value above quantitation range
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- ND *Not Detected at the Reporting Limit*
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** *Injection Well 1-23-2014*

| Sample ID **mb-1** | SampType: **MBLK** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R16304** | RunNo: **16304** | | | | | | | |
| Prep Date: | Analysis Date: **1/24/2014** | SeqNo: **470197** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | ND | 20 | | | | | | | | |

| Sample ID **lcs-1** | SampType: **LCS** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R16304** | RunNo: **16304** | | | | | | | |
| Prep Date: | Analysis Date: **1/24/2014** | SeqNo: **470198** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | 82 | 20 | 80.00 | 0 | 103 | 90 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A07**

*13-Feb-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 1-23-2014

| Sample ID **MB-11406** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **11406** | RunNo: **16349** |
| Prep Date: **1/27/2014** | Analysis Date: **1/28/2014** | SeqNo: **471302** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID **LCS-11406** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **11406** | RunNo: **16349** |
| Prep Date: **1/27/2014** | Analysis Date: **1/28/2014** | SeqNo: **471303** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1010 | 20.0 | 1000 | 0 | 101 | 80 | 120 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Western Refining Southw  Work Order Number: 1401A07  RcptNo: 1

Received by/date: LM 01/24/14

Logged By: Michelle Garcia 1/24/2014 10:15:00 AM Michelle Garcia

Completed By: Michelle Garcia 1/24/2014 12:54:49 PM Michelle Garcia

Reviewed By: AT 01/27/14

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 2. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 4. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 6. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 9. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA Vials ☐ |
| 11. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 13. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 2 2 (<2 or >12 unless noted)

Adjusted? No

Checked by:

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.2 | Good | Yes | | | |

# Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

**Bloomfield, NM 87413**

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other

X EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: **Injection Well**

1-23-2014

Project #:

Project Manager:

Sampler: Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1401A07 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | ~~TPH (Method 418.1)~~ TDS | ~~EDB (Method 504.1)~~ Back-up | PAH (8310 or 8270SIMS) | RCRA 8 Metals Ca, Mg, Na, K | Anions (F,Cl,NO3,NO2,PO4,SO4) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Ignitability | Reactivity, Corrosivity | Ec, pH, $SO_4$, Alk, Cl | ~~Sulfates~~ Sulfides | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-23-4 | 8:35 | $H_2O$ | Injection Well | 5-VOA | HCl | -001 | | | | | | | | | | X | | | | | | |
| | | $H_2O$ | Injection Well | 1 - liter | Amber | -001 | | | | | | | | | | | X | | | | | |
| | | $H_2O$ | Injection Well | 1-500 ml | Amber | -001 | | | | X | | | | | | | | X | | | | |
| | | $H_2O$ | Injection Well | 1-500 ml | Amber | -001 | | | | | | | | | | | | | | X | | |
| | | $H_2O$ | Injection Well | 1-250 ml | $H_2SO_4$ | -001 | | | | | X | | | | | | | | | | | |
| | | $H_2O$ | Injection Well | 1-500 ml | $HNO_3$ | -001 | | | | | | | X | | | | | | | | | |
| | | $H_2O$ | Injection Well | 1-500 ml | Na OH | -001 | | | | | | | | | | | | | X | | | |
| | | $H_2O$ | Injection Well | 1-500 ml | Zn Acutate | -001 | | | | | | | | | | | | | | | X | |

| Date: | Time: | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 1-23-14 | 1510 | Robert Krakow | Christine Walker | 1/23/14 | 1510 |
| 1/23/14 | 1710 | Christine Walker | | 01/24/14 | 1015 |

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

August 15, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Injection Well 7-28-14 3rd QTR OrderNo.: 1407D12

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/29/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 7-28-14 3rd QTR **Collection Date:** 7/28/2014 9:30:00 AM
**Lab ID:** 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LGP** | |
| Chloride | 510 | 25 | | mg/L | 50 | 8/4/2014 5:04:09 PM | R20363 |
| Sulfate | 41 | 2.5 | | mg/L | 5 | 7/29/2014 4:17:43 PM | R20236 |
| **EPA METHOD 7470: MERCURY** | | | | | | Analyst: **MMD** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 8/4/2014 2:43:32 PM | 14571 |
| **EPA 6010B: TOTAL RECOVERABLE METALS** | | | | | | Analyst: **ELS** | |
| Arsenic | ND | 0.020 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Barium | 0.63 | 0.020 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Cadmium | ND | 0.0020 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Calcium | 480 | 5.0 | | mg/L | 5 | 8/2/2014 2:10:49 PM | 14549 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Lead | ND | 0.0050 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Magnesium | 99 | 1.0 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Potassium | 36 | 1.0 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Selenium | ND | 0.050 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Silver | ND | 0.0050 | | mg/L | 1 | 8/2/2014 2:09:02 PM | 14549 |
| Sodium | 1100 | 20 | | mg/L | 20 | 8/2/2014 3:24:50 PM | 14549 |
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Acenaphthene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Acenaphthylene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Aniline | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Anthracene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Azobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benz(a)anthracene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzo(a)pyrene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzo(b)fluoranthene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzo(g,h,i)perylene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzo(k)fluoranthene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzoic acid | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Benzyl alcohol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chloroethoxy)methane | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chloroethyl)ether | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-chloroisopropyl)ether | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Bis(2-ethylhexyl)phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Bromophenyl phenyl ether | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Butyl benzyl phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Carbazole | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Chloro-3-methylphenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Chloroaniline | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

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**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
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**Lab ID:** 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| 2-Chloronaphthalene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Chlorophenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Chlorophenyl phenyl ether | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Chrysene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Di-n-butyl phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Di-n-octyl phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Dibenz(a,h)anthracene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Dibenzofuran | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 1,2-Dichlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 1,3-Dichlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 1,4-Dichlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 3,3'-Dichlorobenzidine | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Diethyl phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Dimethyl phthalate | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4-Dichlorophenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4-Dimethylphenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4,6-Dinitro-2-methylphenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4-Dinitrophenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4-Dinitrotoluene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,6-Dinitrotoluene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Fluoranthene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Fluorene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Hexachlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Hexachlorobutadiene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Hexachlorocyclopentadiene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Hexachloroethane | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Indeno(1,2,3-cd)pyrene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Isophorone | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 1-Methylnaphthalene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Methylnaphthalene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Methylphenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 3+4-Methylphenol | 210 | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| N-Nitrosodi-n-propylamine | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| N-Nitrosodimethylamine | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| N-Nitrosodiphenylamine | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Naphthalene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Nitroaniline | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 3-Nitroaniline | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Nitroaniline | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |

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# Hall Environmental Analysis Laboratory, Inc.

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**Client Sample ID:** Injection Well
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**Collection Date:** 7/28/2014 9:30:00 AM
**Lab ID:** 1407D12-001
**Matrix:** AQUEOUS
**Received Date:** 7/29/2014 7:55:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Nitrobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2-Nitrophenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 4-Nitrophenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Pentachlorophenol | ND | 200 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Phenanthrene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Phenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Pyrene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Pyridine | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 1,2,4-Trichlorobenzene | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4,5-Trichlorophenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| 2,4,6-Trichlorophenol | ND | 100 | | µg/L | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2-Fluorophenol | 0 | 12.1-85.8 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: Phenol-d5 | 0 | 17.7-65.8 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2,4,6-Tribromophenol | 0 | 26-138 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: Nitrobenzene-d5 | 0 | 47.5-119 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 2-Fluorobiphenyl | 0 | 48.1-106 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| Surr: 4-Terphenyl-d14 | 0 | 44-113 | S | %REC | 1 | 7/31/2014 8:37:47 PM | 14520 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **DJF** | |
| Benzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Toluene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Ethylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Methyl tert-butyl ether (MTBE) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2-Dichloroethane (EDC) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2-Dibromoethane (EDB) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Naphthalene | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1-Methylnaphthalene | ND | 8.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Methylnaphthalene | ND | 8.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Acetone | 85 | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromodichloromethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromoform | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Bromomethane | ND | 6.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Butanone | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Carbon disulfide | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Carbon Tetrachloride | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Chlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Chloroethane | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |

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**Lab ID:** 1407D12-001 **Matrix:** AQUEOUS **Received Date:** 7/29/2014 7:55:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **DJF** | |
| Chloroform | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Chloromethane | ND | 6.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| cis-1,2-DCE | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2-Dibromo-3-chloropropane | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dibromochloromethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dibromomethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,4-Dichlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Dichlorodifluoromethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1-Dichloroethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1-Dichloroethene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,3-Dichloropropane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2,2-Dichloropropane | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1-Dichloropropene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 2-Hexanone | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Isopropylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 4-Methyl-2-pentanone | ND | 20 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Methylene Chloride | ND | 6.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| n-Butylbenzene | ND | 6.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| n-Propylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Styrene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1,1,2-Tetrachloroethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1,2,2-Tetrachloroethane | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Tetrachloroethene (PCE) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| trans-1,2-DCE | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1,1-Trichloroethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,1,2-Trichloroethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |

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| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **DJF** | |
| Trichloroethene (TCE) | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Trichlorofluoromethane | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| 1,2,3-Trichloropropane | ND | 4.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Vinyl chloride | ND | 2.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Xylenes, Total | ND | 3.0 | | µg/L | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: 1,2-Dichloroethane-d4 | 92.4 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: 4-Bromofluorobenzene | 95.4 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: Dibromofluoromethane | 100 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| Surr: Toluene-d8 | 93.6 | 70-130 | | %REC | 2 | 7/31/2014 1:41:17 PM | R20298 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1900 | 0.010 | | µmhos/cm | 1 | 7/29/2014 12:08:01 PM | R20245 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.10 | 1.68 | H | pH units | 1 | 7/29/2014 12:08:01 PM | R20245 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 220 | 20 | | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PM | R20245 |
| Carbonate (As CaCO3) | ND | 2.0 | | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PM | R20245 |
| Total Alkalinity (as CaCO3) | 220 | 20 | | mg/L CaCO3 | 1 | 7/29/2014 12:08:01 PM | R20245 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1380 | 200 | * | mg/L | 1 | 7/30/2014 5:19:00 PM | 14475 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

| | | | |
|---|---|---|---|
| **Client:** | HALL ENVIRONMENTAL ANALYSIS LAB | **Batch #:** | 140730036 |
| **Address:** | 4901 HAWKINS NE SUITE D<br>ALBUQUERQUE, NM 87109 | **Project Name:** | 1407D12 |
| **Attn:** | ANDY FREEMAN | | |

## Analytical Results Report

| | | | | | |
|---|---|---|---|---|---|
| **Sample Number** | 140730036-001 | **Sampling Date** | 7/28/2014 | **Date/Time Received** | 7/30/2014 12:25 PM |
| **Client Sample ID** | 1407D12-001E / INJECTION WELL | | | **Sampling Time** | 9:30 AM |
| **Matrix** | Water | | | | |
| **Comments** | | | | | |

| Parameter | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
|---|---|---|---|---|---|---|---|
| Cyanide (reactive) | ND | mg/L | 1 | 8/12/2014 | CRW | SW846 CH7 | |
| Flashpoint | >200 | °F | | 8/5/2014 | KFG | EPA 1010 | |
| pH | 7.44 | ph Units | | 8/5/2014 | AJT | SM 4500pH-B | |
| Reactive sulfide | ND | mg/L | 1 | 8/1/2014 | AJT | SW846 CH7 | |

Authorized Signature

John Coddington, Lab Manager

MCL *EPA's Maximum Contaminant Level*
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB
**Address:** 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
**Attn:** ANDY FREEMAN

**Batch #:** 140730036
**Project Name:** 1407D12

## Analytical Results Report

### Quality Control Data

### Lab Control Sample

| Parameter | LCS Result | Units | LCS Spike | %Rec | AR %Rec | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|
| Reactive sulfide | 0.16 | mg/L | 0.2 | 80.0 | 70-130 | 8/1/2014 | 8/1/2014 |
| Cyanide (reactive) | 0.505 | mg/L | 0.5 | 101.0 | 80-120 | 8/12/2014 | 8/12/2014 |

### Lab Control Sample Duplicate

| Parameter | LCSD Result | Units | LCSD Spike | %Rec | %RPD | AR %RPD | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|---|
| Reactive sulfide | 0.18 | mg/L | 0.2 | 90.0 | 11.8 | 0-25 | 8/1/2014 | 8/1/2014 |

### Matrix Spike

| Sample Number | Parameter | Sample Result | MS Result | Units | MS Spike | %Rec | AR %Rec | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|
| 140730036-001 | Reactive sulfide | ND | 0.22 | mg/L | 0.2 | 110.0 | 70-130 | 8/1/2014 | 8/1/2014 |
| 140730036-001 | Cyanide (reactive) | ND | 0.919 | mg/L | 1 | 91.9 | 80-120 | 8/12/2014 | 8/12/2014 |

### Matrix Spike Duplicate

| Parameter | MSD Result | Units | MSD Spike | %Rec | %RPD | AR %RPD | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|---|
| Cyanide (reactive) | 0.906 | mg/L | 1 | 90.6 | 1.4 | 0-25 | 8/12/2014 | 8/12/2014 |

### Method Blank

| Parameter | Result | Units | PQL | Prep Date | Analysis Date |
|---|---|---|---|---|---|
| Cyanide (reactive) | ND | mg/L | 1 | 8/12/2014 | 8/12/2014 |
| Reactive sulfide | ND | mg/L | 1 | 8/1/2014 | 8/1/2014 |

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

**Comments:**

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1407D12

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20236** | RunNo: **20236** |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588153** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20236** | RunNo: **20236** |
| Prep Date: | *Analysis Date:* **7/29/2014** | SeqNo: **588154** *Units:* **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 97.4 | 90 | 110 | | | |

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20236** | RunNo: **20236** |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588211** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20236** | RunNo: **20236** |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588212** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.6 | 0.50 | 10.00 | 0 | 95.6 | 90 | 110 | | | |

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20363** | RunNo: **20363** |
| Prep Date: | Analysis Date: **8/4/2014** | SeqNo: **592146** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20363** | RunNo: **20363** |
| Prep Date: | Analysis Date: **8/4/2014** | SeqNo: **592147** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 94.2 | 90 | 110 | | | |

**Qualifiers:**

- * *Value exceeds Maximum Contaminant Level.*
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B *Analyte detected in the associated Method Blank*
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20363** | RunNo: **20363** |
| Prep Date: | Analysis Date: **8/5/2014** | SeqNo: **592208** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20363** | RunNo: **20363** |
| Prep Date: | Analysis Date: **8/5/2014** | SeqNo: **592209** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 93.8 | 90 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

WO#: **1407D12**

## Hall Environmental Analysis Laboratory, Inc.

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.
**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **5mL rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20230** | RunNo: **20230** |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **587928** Units: **%REC** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 9.1 | | 10.00 | | 91.3 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.3 | | 10.00 | | 93.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 10 | | 10.00 | | 102 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.7 | | 10.00 | | 96.7 | 70 | 130 | | | |

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20230** | RunNo: **20230** |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **587930** Units: **%REC** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 1,2-Dichloroethane-d4 | 9.9 | | 10.00 | | 98.6 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.5 | | 10.00 | | 95.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 107 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.4 | | 10.00 | | 94.3 | 70 | 130 | | | |

| Sample ID **5ml rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20298** | RunNo: **20298** |
| Prep Date: | Analysis Date: **7/31/2014** | SeqNo: **589943** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S *Spike Recovery outside accepted recovery limits*
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **5ml rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20298** | RunNo: **20298** |
| *Prep Date:* | *Analysis Date:* **7/31/2014** | *SeqNo:* **589943** *Units:* **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |

**Qualifiers:**

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **5ml rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R20298** | RunNo: **20298** |
| Prep Date: | Analysis Date: **7/31/2014** | SeqNo: **589943** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.8 | | 10.00 | | 88.2 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.9 | | 10.00 | | 98.9 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 10 | | 10.00 | | 102 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.9 | | 10.00 | | 98.9 | 70 | 130 | | | |

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20298** | RunNo: **20298** |
| Prep Date: | Analysis Date: **7/31/2014** | SeqNo: **589945** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 20 | 1.0 | 20.00 | 0 | 102 | 70 | 130 | | | |
| Toluene | 21 | 1.0 | 20.00 | 0 | 107 | 80 | 120 | | | |
| Chlorobenzene | 20 | 1.0 | 20.00 | 0 | 99.3 | 70 | 130 | | | |
| 1,1-Dichloroethene | 22 | 1.0 | 20.00 | 0 | 110 | 82.6 | 131 | | | |
| Trichloroethene (TCE) | 21 | 1.0 | 20.00 | 0 | 103 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.2 | | 10.00 | | 91.6 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 100 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.4 | | 10.00 | | 94.3 | 70 | 130 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

WO#: **1407D12**

## Hall Environmental Analysis Laboratory, Inc.

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.
**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **mb-14520** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **14520** | RunNo: **20300** |
| Prep Date: **7/31/2014** | Analysis Date: **7/31/2014** | SeqNo: **590031** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 10 | | | | | | | | |
| Acenaphthylene | ND | 10 | | | | | | | | |
| Aniline | ND | 10 | | | | | | | | |
| Anthracene | ND | 10 | | | | | | | | |
| Azobenzene | ND | 10 | | | | | | | | |
| Benz(a)anthracene | ND | 10 | | | | | | | | |
| Benzo(a)pyrene | ND | 10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 10 | | | | | | | | |
| Benzoic acid | ND | 20 | | | | | | | | |
| Benzyl alcohol | ND | 10 | | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 10 | | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 10 | | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 10 | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | ND | 10 | | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 10 | | | | | | | | |
| Butyl benzyl phthalate | ND | 10 | | | | | | | | |
| Carbazole | ND | 10 | | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 10 | | | | | | | | |
| 4-Chloroaniline | ND | 10 | | | | | | | | |
| 2-Chloronaphthalene | ND | 10 | | | | | | | | |
| 2-Chlorophenol | ND | 10 | | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 10 | | | | | | | | |
| Chrysene | ND | 10 | | | | | | | | |
| Di-n-butyl phthalate | ND | 10 | | | | | | | | |
| Di-n-octyl phthalate | ND | 10 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 10 | | | | | | | | |
| Dibenzofuran | ND | 10 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 10 | | | | | | | | |
| 3,3'-Dichlorobenzidine | ND | 10 | | | | | | | | |
| Diethyl phthalate | ND | 10 | | | | | | | | |
| Dimethyl phthalate | ND | 10 | | | | | | | | |
| 2,4-Dichlorophenol | ND | 20 | | | | | | | | |
| 2,4-Dimethylphenol | ND | 10 | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 20 | | | | | | | | |
| 2,4-Dinitrophenol | ND | 20 | | | | | | | | |

**Qualifiers:**

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- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1407D12

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **mb-14520** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **14520** | RunNo: **20300** |
| Prep Date: **7/31/2014** | Analysis Date: **7/31/2014** | SeqNo: **590031** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | ND | 10 | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 10 | | | | | | | | |
| Fluoranthene | ND | 10 | | | | | | | | |
| Fluorene | ND | 10 | | | | | | | | |
| Hexachlorobenzene | ND | 10 | | | | | | | | |
| Hexachlorobutadiene | ND | 10 | | | | | | | | |
| Hexachlorocyclopentadiene | ND | 10 | | | | | | | | |
| Hexachloroethane | ND | 10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 10 | | | | | | | | |
| Isophorone | ND | 10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 2-Methylphenol | ND | 20 | | | | | | | | |
| 3+4-Methylphenol | ND | 10 | | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 10 | | | | | | | | |
| N-Nitrosodimethylamine | ND | 10 | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 10 | | | | | | | | |
| Naphthalene | ND | 10 | | | | | | | | |
| 2-Nitroaniline | ND | 10 | | | | | | | | |
| 3-Nitroaniline | ND | 10 | | | | | | | | |
| 4-Nitroaniline | ND | 10 | | | | | | | | |
| Nitrobenzene | ND | 10 | | | | | | | | |
| 2-Nitrophenol | ND | 10 | | | | | | | | |
| 4-Nitrophenol | ND | 10 | | | | | | | | |
| Pentachlorophenol | ND | 20 | | | | | | | | |
| Phenanthrene | ND | 10 | | | | | | | | |
| Phenol | ND | 10 | | | | | | | | |
| Pyrene | ND | 10 | | | | | | | | |
| Pyridine | ND | 10 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 10 | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 10 | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | | | | | | | | |
| Surr: 2-Fluorophenol | 130 | | 200.0 | | 66.7 | 12.1 | 85.8 | | | |
| Surr: Phenol-d5 | 95 | | 200.0 | | 47.4 | 17.7 | 65.8 | | | |
| Surr: 2,4,6-Tribromophenol | 170 | | 200.0 | | 86.4 | 26 | 138 | | | |
| Surr: Nitrobenzene-d5 | 84 | | 100.0 | | 83.6 | 47.5 | 119 | | | |
| Surr: 2-Fluorobiphenyl | 84 | | 100.0 | | 83.7 | 48.1 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 94 | | 100.0 | | 94.5 | 44 | 113 | | | |

**Qualifiers:**

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H *Holding times for preparation or analysis exceeded*
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- P Sample pH greater than 2.
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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

Sample ID **lcs-14520** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **14520** RunNo: **20300**

Prep Date: **7/31/2014** Analysis Date: **7/31/2014** SeqNo: **590032** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 87 | 10 | 100.0 | 0 | 87.0 | 50.3 | 109 | | | |
| 4-Chloro-3-methylphenol | 200 | 10 | 200.0 | 0 | 99.0 | 51.2 | 113 | | | |
| 2-Chlorophenol | 190 | 10 | 200.0 | 0 | 94.9 | 48.5 | 104 | | | |
| 1,4-Dichlorobenzene | 80 | 10 | 100.0 | 0 | 79.5 | 39.5 | 106 | | | |
| 2,4-Dinitrotoluene | 82 | 10 | 100.0 | 0 | 82.3 | 45.4 | 107 | | | |
| N-Nitrosodi-n-propylamine | 91 | 10 | 100.0 | 0 | 91.0 | 50.4 | 119 | | | |
| 4-Nitrophenol | 110 | 10 | 200.0 | 0 | 53.6 | 15.5 | 62.2 | | | |
| Pentachlorophenol | 150 | 20 | 200.0 | 0 | 72.7 | 23.5 | 93.5 | | | |
| Phenol | 110 | 10 | 200.0 | 0 | 54.8 | 26.8 | 65.6 | | | |
| Pyrene | 96 | 10 | 100.0 | 0 | 95.5 | 54.4 | 108 | | | |
| 1,2,4-Trichlorobenzene | 78 | 10 | 100.0 | 0 | 78.0 | 39.9 | 106 | | | |
| Surr: 2-Fluorophenol | 140 | | 200.0 | | 72.4 | 12.1 | 85.8 | | | |
| Surr: Phenol-d5 | 100 | | 200.0 | | 52.5 | 17.7 | 65.8 | | | |
| Surr: 2,4,6-Tribromophenol | 170 | | 200.0 | | 87.0 | 26 | 138 | | | |
| Surr: Nitrobenzene-d5 | 100 | | 100.0 | | 101 | 47.5 | 119 | | | |
| Surr: 2-Fluorobiphenyl | 96 | | 100.0 | | 96.0 | 48.1 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 91 | | 100.0 | | 90.9 | 44 | 113 | | | |

Sample ID **lcsd-14520** SampType: **LCSD** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSS02** Batch ID: **14520** RunNo: **20300**

Prep Date: **7/31/2014** Analysis Date: **7/31/2014** SeqNo: **590033** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 77 | 10 | 100.0 | 0 | 76.5 | 50.3 | 109 | 12.8 | 27.2 | |
| 4-Chloro-3-methylphenol | 190 | 10 | 200.0 | 0 | 93.8 | 51.2 | 113 | 5.37 | 25.9 | |
| 2-Chlorophenol | 170 | 10 | 200.0 | 0 | 84.4 | 48.5 | 104 | 11.7 | 22.5 | |
| 1,4-Dichlorobenzene | 73 | 10 | 100.0 | 0 | 73.3 | 39.5 | 106 | 8.19 | 24.6 | |
| 2,4-Dinitrotoluene | 73 | 10 | 100.0 | 0 | 73.1 | 45.4 | 107 | 11.9 | 25.3 | |
| N-Nitrosodi-n-propylamine | 85 | 10 | 100.0 | 0 | 84.9 | 50.4 | 119 | 6.98 | 23.6 | |
| 4-Nitrophenol | 110 | 10 | 200.0 | 0 | 52.7 | 15.5 | 62.2 | 1.69 | 34.7 | |
| Pentachlorophenol | 150 | 20 | 200.0 | 0 | 72.9 | 23.5 | 93.5 | 0.275 | 32.8 | |
| Phenol | 100 | 10 | 200.0 | 0 | 51.6 | 26.8 | 65.6 | 6.05 | 25.5 | |
| Pyrene | 89 | 10 | 100.0 | 0 | 88.8 | 54.4 | 108 | 7.31 | 31.4 | |
| 1,2,4-Trichlorobenzene | 68 | 10 | 100.0 | 0 | 68.4 | 39.9 | 106 | 13.1 | 25.9 | |
| Surr: 2-Fluorophenol | 140 | | 200.0 | | 68.8 | 12.1 | 85.8 | 0 | 0 | |
| Surr: Phenol-d5 | 110 | | 200.0 | | 53.9 | 17.7 | 65.8 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 170 | | 200.0 | | 86.5 | 26 | 138 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 88 | | 100.0 | | 88.1 | 47.5 | 119 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 90 | | 100.0 | | 89.9 | 48.1 | 106 | 0 | 0 | |

**Qualifiers:**

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- B Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID | **lcsd-14520** | SampType: **LCSD** | | TestCode: **EPA Method 8270C: Semivolatiles** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS02** | Batch ID: **14520** | | RunNo: **20300** | | | | | |
| Prep Date: | **7/31/2014** | Analysis Date: **7/31/2014** | | SeqNo: **590033** | Units: **µg/L** | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 4-Terphenyl-d14 | 90 | | 100.0 | | 90.0 | 44 | 113 | 0 | 0 | |

**Qualifiers:**

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID | **1407d12-001b dup** | SampType: **DUP** | | TestCode: **SM2510B: Specific Conductance** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **Injection Well** | Batch ID: **R20245** | | RunNo: **20245** | | | | | |
| *Prep Date:* | | *Analysis Date:* ***7/29/2014*** | | *SeqNo:* ***588403*** | | *Units:* **µmhos/cm** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Conductivity | 1800 | 0.010 | | | | | | 4.30 | 20 | |

**Qualifiers:**

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID | **MB-14571** | SampType: **MBLK** | | | TestCode: **EPA Method 7470: Mercury** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: **14571** | | | RunNo: **20345** | | | | | |
| Prep Date: | **8/4/2014** | Analysis Date: **8/4/2014** | | | SeqNo: **591482** | | Units: **mg/L** | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| *Mercury* | | *ND* | *0.00020* | | | | | | | | |

| Sample ID | **LCS-14571** | SampType: **LCS** | | | TestCode: **EPA Method 7470: Mercury** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Client ID:* | ***LCSW*** | *Batch ID:* ***14571*** | | | *RunNo:* ***20345*** | | | | | |
| Prep Date: | **8/4/2014** | Analysis Date: **8/4/2014** | | | SeqNo: **591483** | | Units: **mg/L** | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | | 0.0049 | 0.00020 | 0.005000 | 0 | 98.9 | 80 | 120 | | | |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

Sample ID **MB-14549** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590696** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.020 | | | | | | | | |
| Barium | ND | 0.020 | | | | | | | | |
| Cadmium | ND | 0.0020 | | | | | | | | |
| Calcium | ND | 1.0 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Lead | ND | 0.0050 | | | | | | | | |
| Magnesium | ND | 1.0 | | | | | | | | |
| Potassium | ND | 1.0 | | | | | | | | |
| Selenium | ND | 0.050 | | | | | | | | |
| Silver | ND | 0.0050 | | | | | | | | |
| Sodium | ND | 1.0 | | | | | | | | |

Sample ID **LCS-14549** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590697** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.50 | 0.020 | 0.5000 | 0 | 101 | 80 | 120 | | | |
| Barium | 0.50 | 0.020 | 0.5000 | 0 | 99.7 | 80 | 120 | | | |
| Cadmium | 0.50 | 0.0020 | 0.5000 | 0 | 99.7 | 80 | 120 | | | |
| Calcium | ND | 1.0 | 50.00 | 0 | 0 | 80 | 120 | | | S |
| Chromium | 0.50 | 0.0060 | 0.5000 | 0 | 100 | 80 | 120 | | | |
| Lead | 0.50 | 0.0050 | 0.5000 | 0 | 99.5 | 80 | 120 | | | |
| Magnesium | ND | 1.0 | 50.00 | 0 | 0 | 80 | 120 | | | S |
| Potassium | ND | 1.0 | 50.00 | 0 | 0 | 80 | 120 | | | S |
| Selenium | 0.52 | 0.050 | 0.5000 | 0 | 105 | 80 | 120 | | | |
| Silver | 0.085 | 0.0050 | 0.1000 | 0 | 84.9 | 80 | 120 | | | |
| Sodium | ND | 1.0 | 50.00 | 0 | 0 | 80 | 120 | | | S |

Sample ID **LCS Cat-14549** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **14549** RunNo: **20323**

Prep Date: **8/1/2014** Analysis Date: **8/2/2014** SeqNo: **590698** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 51 | 1.0 | 50.00 | 0 | 102 | 80 | 120 | | | |
| Magnesium | 51 | 1.0 | 50.00 | 0 | 101 | 80 | 120 | | | |
| Potassium | 49 | 1.0 | 50.00 | 0 | 97.3 | 80 | 120 | | | |
| Sodium | 50 | 1.0 | 50.00 | 0 | 101 | 80 | 120 | | | |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID | **1407d12-001b dup** | SampType: **DUP** | | TestCode: **SM4500-H+B: pH** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **Injection Well** | Batch ID: **R20245** | | RunNo: **20245** | | | | | | |
| Prep Date: | | Analysis Date: **7/29/2014** | | SeqNo: **588388** | | Units: **pH units** | | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| pH | | 7.11 | 1.68 | | | | | | | | H |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1407D12**

*15-Aug-14*

**Client:** *Western Refining Southwest, Inc.*

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID **mb-1** | SampType: **MBLK** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R20245** | RunNo: **20245** | | | | | | | |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588355** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | ND | 20 | | | | | | | | |

| *Sample ID* **lcs-1** | *SampType:* **LCS** | *TestCode:* **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20245** | RunNo: **20245** | | | | | | | |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588356** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | 80 | 20 | 80.00 | 0 | 100 | 90 | 110 | | | |

| Sample ID **mb-2** | SampType: **MBLK** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R20245** | RunNo: **20245** | | | | | | | |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588376** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | ND | 20 | | | | | | | | |

| Sample ID **lcs-2** | SampType: **LCS** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R20245** | RunNo: **20245** | | | | | | | |
| Prep Date: | Analysis Date: **7/29/2014** | SeqNo: **588377** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | 80 | 20 | 80.00 | 0 | 100 | 90 | 110 | | | |

**Qualifiers:**

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- B *Analyte detected in the associated Method Blank*
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1407D12

15-Aug-14

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 7-28-14 3rd QTR

| Sample ID MB-14475 | SampType: MBLK | TestCode: SM2540C MOD: Total Dissolved Solids |
|---|---|---|
| Client ID: PBW | Batch ID: 14475 | RunNo: 20257 |
| Prep Date: 7/29/2014 | Analysis Date: 7/30/2014 | SeqNo: 588640 Units: mg/L |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID LCS-14475 | SampType: LCS | TestCode: SM2540C MOD: Total Dissolved Solids |
|---|---|---|
| Client ID: LCSW | Batch ID: 14475 | RunNo: 20257 |
| Prep Date: 7/29/2014 | Analysis Date: 7/30/2014 | SeqNo: 588641 Units: mg/L |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1020 | 20.0 | 1000 | 0 | 102 | 80 | 120 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Western Refining Southw  Work Order Number: 1407D12  RcptNo: 1

Received by/date: AT 07/29/14

Logged By: Anne Thorne 7/29/2014 7:55:00 AM Anne Thorne

Completed By: Anne Thorne 7/29/2014 Anne Thorne

Reviewed By: MG 07/29/14

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 2. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 4. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. *Were all samples received at a temperature of >0° C to 6.0°C* | Yes ☑ | No ☐ | NA ☐ |
| 6. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 9. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA Vials ☐ |
| 11. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 13. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 2 (2) 2 (<2 or >12 unless noted)

Adjusted? no

Checked by: CS

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.0 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: 7-28-14
Injection Well 3rd QTR

Project #:

Project Manager:

Sampler: Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: °C

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1407212 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TDS | Backup | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals Ca, Mg, Na, K | Anions (F,Cl,NO3,NO2,PO4,SO4) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Ignitability, Corrosivity, Reactivity | Ec, pH, SO4, Alk, Cl | Sulfides | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7-28-14 | 9:30 | H2O | Injection Well | 3-VOA | HCl | 001 | | | | | | | | | | X | | | | | |
| | | | | 1-liter | amber | 002 | | | | | | | | | | | X | | | | |
| | | | | 1-500ml | — | 003 | | | | | | | | | | | | X | | | |
| | | | | 1-500ml | — | 004 | | | | X | | | | | | | | | X | | |
| | | | | 1-250ml | $H_2SO_4$ | 005 | | | | | X | | | | | | | | | | |
| | | | | 1-500ml | $HNO_3$ | 006 | | | | | | | X | | | | | | | | |
| | | | | 1-500ml | NaOH | 007 | | | | | | | | | | | | X | | | |
| | | | | 1-500ml | ZN Acetate | 008 | | | | | | | | | | | | | | X | |

| Date: | Time: | Relinquished by: | Received by: | Date Time |
|---|---|---|---|---|
| 7-28-14 | 1452 | Robert Krakow | Christine Walls | 7/28/14 1452 |
| 7/28/14 | 1724 | Christine Walls | | 07/29/14 0755 |

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

October 23, 2014

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Injection Well 4th QTR 10-1-14 OrderNo.: 1410102

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 10/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

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# Case Narrative

WO#: **1410102**
Date: **10/23/2014**

**CLIENT:** Western Refining Southwest, Inc.
**Project:** Injection Well 4th QTR 10-1-14

Analytical Notes Regarding EPA Method 8260:
The injection well sample was diluted due to a foamy matrix.

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
**Lab ID:** 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LGP** | |
| Chloride | 220 | 10 | | mg/L | 20 | 10/2/2014 4:07:13 PM | R21640 |
| Sulfate | 26 | 2.5 | | mg/L | 5 | 10/2/2014 3:54:49 PM | R21640 |
| **EPA METHOD 7470: MERCURY** | | | | | | Analyst: **MMD** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 10/8/2014 3:02:49 PM | 15770 |
| **EPA 6010B: TOTAL RECOVERABLE METALS** | | | | | | Analyst: **ELS** | |
| Arsenic | ND | 0.020 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Barium | 0.20 | 0.020 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Cadmium | ND | 0.0020 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Calcium | 110 | 5.0 | | mg/L | 5 | 10/10/2014 9:28:28 AM | 15825 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Lead | ND | 0.0050 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Magnesium | 23 | 1.0 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Potassium | 8.2 | 1.0 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Selenium | ND | 0.050 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Silver | ND | 0.0050 | | mg/L | 1 | 10/10/2014 9:26:53 AM | 15825 |
| Sodium | 220 | 5.0 | | mg/L | 5 | 10/10/2014 9:28:28 AM | 15825 |
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Acenaphthene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Acenaphthylene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Aniline | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Anthracene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Azobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benz(a)anthracene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzo(a)pyrene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzo(b)fluoranthene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzo(g,h,i)perylene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzo(k)fluoranthene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzoic acid | ND | 40 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Benzyl alcohol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Bis(2-chloroethoxy)methane | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Bis(2-chloroethyl)ether | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Bis(2-chloroisopropyl)ether | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Bis(2-ethylhexyl)phthalate | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Bromophenyl phenyl ether | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Butyl benzyl phthalate | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Carbazole | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Chloro-3-methylphenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Chloroaniline | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
**Lab ID:** 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| 2-Chloronaphthalene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Chlorophenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Chlorophenyl phenyl ether | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Chrysene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Di-n-butyl phthalate | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Di-n-octyl phthalate | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Dibenz(a,h)anthracene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Dibenzofuran | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 1,2-Dichlorobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 1,3-Dichlorobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 1,4-Dichlorobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 3,3'-Dichlorobenzidine | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Diethyl phthalate | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Dimethyl phthalate | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4-Dichlorophenol | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4-Dimethylphenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4,6-Dinitro-2-methylphenol | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4-Dinitrophenol | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4-Dinitrotoluene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,6-Dinitrotoluene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Fluoranthene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Fluorene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Hexachlorobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Hexachlorobutadiene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Hexachlorocyclopentadiene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Hexachloroethane | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Indeno(1,2,3-cd)pyrene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Isophorone | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 1-Methylnaphthalene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Methylnaphthalene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Methylphenol | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 3+4-Methylphenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| N-Nitrosodi-n-propylamine | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| N-Nitrosodimethylamine | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| N-Nitrosodiphenylamine | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Naphthalene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Nitroaniline | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 3-Nitroaniline | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Nitroaniline | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- P Sample pH greater than 2.
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S Spike Recovery outside accepted recovery limits

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
**Lab ID:** 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270C: SEMIVOLATILES** | | | | | | Analyst: **DAM** | |
| Nitrobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2-Nitrophenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 4-Nitrophenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Pentachlorophenol | ND | 20 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Phenanthrene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Phenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Pyrene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Pyridine | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 1,2,4-Trichlorobenzene | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4,5-Trichlorophenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| 2,4,6-Trichlorophenol | ND | 10 | | µg/L | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2-Fluorophenol | 59.4 | 12.1-85.8 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: Phenol-d5 | 52.8 | 17.7-65.8 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2,4,6-Tribromophenol | 83.8 | 26-138 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: Nitrobenzene-d5 | 76.3 | 47.5-119 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 2-Fluorobiphenyl | 68.0 | 48.1-106 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| Surr: 4-Terphenyl-d14 | 69.3 | 44-113 | | %REC | 1 | 10/9/2014 9:16:21 PM | 15747 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Toluene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Ethylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Naphthalene | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1-Methylnaphthalene | ND | 20 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Methylnaphthalene | ND | 20 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Acetone | 120 | 50 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromodichloromethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromoform | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Bromomethane | ND | 15 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Butanone | ND | 50 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Carbon disulfide | ND | 50 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Carbon Tetrachloride | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Chlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Chloroethane | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Injection Well
**Project:** Injection Well 4th QTR 10-1-14 **Collection Date:** 10/1/2014 10:00:00 AM
**Lab ID:** 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Chloroform | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Chloromethane | ND | 15 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Chlorotoluene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 4-Chlorotoluene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| cis-1,2-DCE | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| cis-1,3-Dichloropropene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Dibromochloromethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Dibromomethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dichlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,3-Dichlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,4-Dichlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Dichlorodifluoromethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1-Dichloroethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1-Dichloroethene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2-Dichloropropane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,3-Dichloropropane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2,2-Dichloropropane | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1-Dichloropropene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Hexachlorobutadiene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 2-Hexanone | ND | 50 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Isopropylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 4-Isopropyltoluene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 4-Methyl-2-pentanone | ND | 50 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Methylene Chloride | ND | 15 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| n-Butylbenzene | ND | 15 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| n-Propylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| sec-Butylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Styrene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| tert-Butylbenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Tetrachloroethene (PCE) | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| trans-1,2-DCE | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| trans-1,3-Dichloropropene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1,1-Trichloroethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,1,2-Trichloroethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** Injection Well
**Project:** Injection Well 4th QTR 10-1-14
**Collection Date:** 10/1/2014 10:00:00 AM
**Lab ID:** 1410102-001 **Matrix:** AQUEOUS **Received Date:** 10/2/2014 6:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Trichloroethene (TCE) | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Trichlorofluoromethane | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| 1,2,3-Trichloropropane | ND | 10 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Vinyl chloride | ND | 5.0 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Xylenes, Total | ND | 7.5 | | µg/L | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Surr: 1,2-Dichloroethane-d4 | 82.3 | 70-130 | | %REC | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Surr: 4-Bromofluorobenzene | 84.8 | 70-130 | | %REC | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Surr: Dibromofluoromethane | 79.9 | 70-130 | | %REC | 5 | 10/3/2014 10:52:10 PM | R21653 |
| Surr: Toluene-d8 | 84.8 | 70-130 | | %REC | 5 | 10/3/2014 10:52:10 PM | R21653 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1100 | 0.010 | | µmhos/cm | 1 | 10/6/2014 5:51:56 PM | R21715 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.08 | 1.68 | H | pH units | 1 | 10/6/2014 5:51:56 PM | R21715 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 150 | 20 | | mg/L CaCO3 | 1 | 10/6/2014 5:51:56 PM | R21715 |
| Carbonate (As CaCO3) | ND | 2.0 | | mg/L CaCO3 | 1 | 10/6/2014 5:51:56 PM | R21715 |
| Total Alkalinity (as CaCO3) | 150 | 20 | | mg/L CaCO3 | 1 | 10/6/2014 5:51:56 PM | R21715 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 742 | 40.0 | * | mg/L | 1 | 10/8/2014 4:42:00 PM | 15759 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range | H | Holding times for preparation or analysis exceeded |
| J | Analyte detected below quantitation limits | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | P | Sample pH greater than 2. |
| R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | | |

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

| | | | |
|---|---|---|---|
| **Client:** | HALL ENVIRONMENTAL ANALYSIS LAB | **Batch #:** | 141003043 |
| **Address:** | 4901 HAWKINS NE SUITE D<br>ALBUQUERQUE, NM 87109 | **Project Name:** | 1410102 |
| **Attn:** | ANDY FREEMAN | | |

## Analytical Results Report

| | | | | | |
|---|---|---|---|---|---|
| **Sample Number** | 141003043-001 | **Sampling Date** | 10/1/2014 | **Date/Time Received** | 10/3/2014 1:30 PM |
| **Client Sample ID** | 1410102-001E / INJECTION WELL | | | **Sampling Time** | 10:00 AM |
| **Matrix** | Water | **Sample Location** | | | |
| **Comments** | | | | | |

| Parameter | Result | Units | PQL | Analysis Date | Analyst | Method | Qualifier |
|---|---|---|---|---|---|---|---|
| Cyanide (reactive) | ND | mg/L | 1 | 10/15/2014 | CRW | SW846 CH7 | |
| Flashpoint | >200 | °F | | 10/15/2014 | KFG | EPA 1010 | |
| pH | 6.82 | ph Units | | 10/6/2014 | KJS | SM 4500pH-B | |
| Reactive sulfide | 3.01 | mg/L | 1 | 10/15/2014 | HSW | SW846 CH7 | |

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

# *Anatek Labs, Inc.*

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

| | | | |
|---|---|---|---|
| **Client:** | HALL ENVIRONMENTAL ANALYSIS LAB | **Batch #:** | 141003043 |
| **Address:** | 4901 HAWKINS NE SUITE D<br>ALBUQUERQUE, NM 87109 | **Project Name:** | 1410102 |
| ***Attn:*** | ANDY FREEMAN | | |

## Analytical Results Report

### Quality Control Data

### Lab Control Sample

| Parameter | LCS Result | Units | LCS Spike | %Rec | AR %Rec | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|
| Reactive sulfide | 0.180 | mg/L | 0.2 | 90.0 | 70-130 | 10/15/2014 | 10/15/2014 |
| Cyanide (reactive) | 0.519 | mg/L | 0.5 | 103.8 | 80-120 | 10/15/2014 | 10/15/2014 |

### Matrix Spike

| *Sample Number* | *Parameter* | *Sample Result* | *MS Result* | *Units* | *MS Spike* | *%Rec* | *AR %Rec* | *Prep Date* | *Analysis Date* |
|---|---|---|---|---|---|---|---|---|---|
| 141003043-001 | Reactive sulfide | 3.01 | 3.77 | mg/L | 0.767 | 99.1 | 70-130 | 10/15/2014 | 10/15/2014 |
| 141003043-001 | *Cyanide (reactive)* | *ND* | 2.41 | *mg/L* | 2.5 | 96.4 | 80-120 | 10/15/2014 | 10/15/2014 |

### Matrix Spike Duplicate

| Parameter | MSD Result | Units | MSD Spike | %Rec | %RPD | AR %RPD | Prep Date | Analysis Date |
|---|---|---|---|---|---|---|---|---|
| Cyanide (reactive) | 2.41 | mg/L | 2.5 | 96.4 | 0.0 | 0-25 | 10/15/2014 | 10/15/2014 |

### Method Blank

| Parameter | Result | Units | PQL | Prep Date | Analysis Date |
|---|---|---|---|---|---|
| Cyanide (reactive) | ND | mg/L | 1 | 10/15/2014 | 10/15/2014 |
| Reactive sulfide | ND | mg/L | 1 | 10/15/2014 | 10/15/2014 |

| | |
|---|---|
| AR | Acceptable Range |
| ND | Not Detected. |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percentage Difference |

**Comments:**

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871039

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R21640** | RunNo: **21640** |
| Prep Date: | Analysis Date: **10/2/2014** | SeqNo: **634799** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **LCS** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R21640** | RunNo: **21640** |
| Prep Date: | Analysis Date: **10/2/2014** | SeqNo: **634800** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 94.0 | 90 | 110 | | | |
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 96.8 | 90 | 110 | | | |

**Qualifiers:**

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- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **5ml-rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R21653** | RunNo: **21653** |
| Prep Date: | Analysis Date: **10/3/2014** | SeqNo: **636225** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| *Acetone* | *ND* | *10* | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| *1,1-Dichloroethane* | *ND* | *1.0* | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R *RPD outside accepted recovery limits*
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL *Reporting Detection Limit*

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **5ml-rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R21653** | RunNo: **21653** |
| Prep Date: | Analysis Date: **10/3/2014** | SeqNo: **636225** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.0 | | 10.00 | | 80.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 8.0 | | 10.00 | | 80.5 | 70 | 130 | | | |
| Surr: Toluene-d8 | 8.9 | | 10.00 | | 89.4 | 70 | 130 | | | |

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R21653** | RunNo: **21653** |
| Prep Date: | Analysis Date: **10/3/2014** | SeqNo: **636227** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 19 | 1.0 | 20.00 | 0 | 96.4 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 98.8 | 80 | 120 | | | |
| Chlorobenzene | 20 | 1.0 | 20.00 | 0 | 97.9 | 70 | 130 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R21653** | RunNo: **21653** |
| Prep Date: | Analysis Date: **10/3/2014** | SeqNo: **636227** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 21 | 1.0 | 20.00 | 0 | 105 | 82.6 | 131 | | | |
| Trichloroethene (TCE) | 19 | 1.0 | 20.00 | 0 | 96.9 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.5 | | 10.00 | | 84.9 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.8 | | 10.00 | | 97.7 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 8.0 | | 10.00 | | 79.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.1 | | 10.00 | | 91.1 | 70 | 130 | | | |

**Qualifiers:**

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- J Analyte detected below quantitation limits
- O *RSD* is greater than *RSDlimit*
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **mb-15747** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **15747** | RunNo: **21803** |
| Prep Date: **10/7/2014** | Analysis Date: **10/9/2014** | SeqNo: **640784** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 10 | | | | | | | | |
| Acenaphthylene | ND | 10 | | | | | | | | |
| Aniline | ND | 10 | | | | | | | | |
| Anthracene | ND | 10 | | | | | | | | |
| Azobenzene | ND | 10 | | | | | | | | |
| Benz(a)anthracene | ND | 10 | | | | | | | | |
| Benzo(a)pyrene | ND | 10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 10 | | | | | | | | |
| Benzoic acid | ND | 40 | | | | | | | | |
| Benzyl alcohol | ND | 10 | | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 10 | | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 10 | | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 10 | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | ND | 10 | | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 10 | | | | | | | | |
| Butyl benzyl phthalate | ND | 10 | | | | | | | | |
| Carbazole | ND | 10 | | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 10 | | | | | | | | |
| 4-Chloroaniline | ND | 10 | | | | | | | | |
| 2-Chloronaphthalene | ND | 10 | | | | | | | | |
| 2-Chlorophenol | ND | 10 | | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 10 | | | | | | | | |
| Chrysene | ND | 10 | | | | | | | | |
| Di-n-butyl phthalate | ND | 10 | | | | | | | | |
| Di-n-octyl phthalate | ND | 20 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 10 | | | | | | | | |
| Dibenzofuran | ND | 10 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 10 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 10 | | | | | | | | |
| 3,3'-Dichlorobenzidine | ND | 10 | | | | | | | | |
| Diethyl phthalate | ND | 10 | | | | | | | | |
| Dimethyl phthalate | ND | 10 | | | | | | | | |
| 2,4-Dichlorophenol | ND | 20 | | | | | | | | |
| 2,4-Dimethylphenol | ND | 10 | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 20 | | | | | | | | |
| 2,4-Dinitrophenol | ND | 20 | | | | | | | | |

*Qualifiers:*

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **mb-15747** | SampType: **MBLK** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **15747** | RunNo: **21803** |
| Prep Date: **10/7/2014** | Analysis Date: **10/9/2014** | SeqNo: **640784** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | ND | 10 | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 10 | | | | | | | | |
| *Fluoranthene* | *ND* | *10* | | | | | | | | |
| Fluorene | ND | 10 | | | | | | | | |
| Hexachlorobenzene | ND | 10 | | | | | | | | |
| Hexachlorobutadiene | ND | 10 | | | | | | | | |
| *Hexachlorocyclopentadiene* | *ND* | *10* | | | | | | | | |
| Hexachloroethane | ND | 10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 10 | | | | | | | | |
| Isophorone | ND | 10 | | | | | | | | |
| *1-Methylnaphthalene* | *ND* | *10* | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 2-Methylphenol | ND | 20 | | | | | | | | |
| 3+4-Methylphenol | ND | 10 | | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 10 | | | | | | | | |
| N-Nitrosodimethylamine | ND | 10 | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 10 | | | | | | | | |
| Naphthalene | ND | 10 | | | | | | | | |
| 2-Nitroaniline | ND | 10 | | | | | | | | |
| 3-Nitroaniline | ND | 10 | | | | | | | | |
| 4-Nitroaniline | ND | 10 | | | | | | | | |
| Nitrobenzene | ND | 10 | | | | | | | | |
| 2-Nitrophenol | ND | 10 | | | | | | | | |
| 4-Nitrophenol | ND | 10 | | | | | | | | |
| Pentachlorophenol | ND | 20 | | | | | | | | |
| Phenanthrene | ND | 10 | | | | | | | | |
| Phenol | ND | 10 | | | | | | | | |
| Pyrene | ND | 10 | | | | | | | | |
| Pyridine | ND | 10 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 10 | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 10 | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | | | | | | | | |
| Surr: 2-Fluorophenol | 140 | | 200.0 | | 68.8 | 12.1 | 85.8 | | | |
| Surr: Phenol-d5 | 130 | | 200.0 | | 64.5 | 17.7 | 65.8 | | | |
| Surr: 2,4,6-Tribromophenol | 130 | | 200.0 | | 66.6 | 26 | 138 | | | |
| Surr: Nitrobenzene-d5 | 79 | | 100.0 | | 79.4 | 47.5 | 119 | | | |
| Surr: 2-Fluorobiphenyl | 75 | | 100.0 | | 75.3 | 48.1 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 74 | | 100.0 | | 74.3 | 44 | 113 | | | |

**Qualifiers:**

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **lcs-15747** | SampType: **LCS** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **15747** | RunNo: **21803** |
| Prep Date: **10/7/2014** | Analysis Date: **10/9/2014** | SeqNo: **640785** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 77 | 10 | 100.0 | 0 | 76.7 | 47.9 | 114 | | | |
| 4-Chloro-3-methylphenol | 180 | 10 | 200.0 | 0 | 88.1 | 51.7 | 122 | | | |
| 2-Chlorophenol | 170 | 10 | 200.0 | 0 | 83.0 | 40.7 | 113 | | | |
| 1,4-Dichlorobenzene | 70 | 10 | 100.0 | 0 | 70.4 | 39.6 | 99.9 | | | |
| 2,4-Dinitrotoluene | 69 | 10 | 100.0 | 0 | 68.9 | 40.8 | 113 | | | |
| N-Nitrosodi-n-propylamine | 81 | 10 | 100.0 | 0 | 81.2 | 51.2 | 111 | | | |
| 4-Nitrophenol | 130 | 10 | 200.0 | 0 | 64.1 | 15.7 | 86.9 | | | |
| Pentachlorophenol | 120 | 20 | 200.0 | 0 | 59.2 | 21.6 | 104 | | | |
| Phenol | 140 | 10 | 200.0 | 0 | 71.0 | 28.6 | 71.7 | | | |
| Pyrene | 73 | 10 | 100.0 | 0 | 73.1 | 54.2 | 128 | | | |
| 1,2,4-Trichlorobenzene | 71 | 10 | 100.0 | 0 | 71.2 | 40.9 | 101 | | | |
| Surr: 2-Fluorophenol | 150 | | 200.0 | | 73.2 | 12.1 | 85.8 | | | |
| Surr: Phenol-d5 | 140 | | 200.0 | | 71.8 | 17.7 | 65.8 | | | S |
| Surr: 2,4,6-Tribromophenol | 140 | | 200.0 | | 70.9 | 26 | 138 | | | |
| Surr: Nitrobenzene-d5 | 83 | | 100.0 | | 83.4 | 47.5 | 119 | | | |
| Surr: 2-Fluorobiphenyl | 0.46 | | 100.0 | | 0.460 | 48.1 | 106 | | | S |
| Surr: 4-Terphenyl-d14 | 75 | | 100.0 | | 75.1 | 44 | 113 | | | |

| Sample ID **lcsd-15747** | SampType: **LCSD** | TestCode: **EPA Method 8270C: Semivolatiles** |
|---|---|---|
| Client ID: **LCSS02** | Batch ID: **15747** | RunNo: **21803** |
| Prep Date: **10/7/2014** | Analysis Date: **10/9/2014** | SeqNo: **640786** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 79 | 10 | 100.0 | 0 | 78.8 | 47.9 | 114 | 2.60 | 27.2 | |
| 4-Chloro-3-methylphenol | 190 | 10 | 200.0 | 0 | 94.7 | 51.7 | 122 | 7.26 | 25.9 | |
| 2-Chlorophenol | 160 | 10 | 200.0 | 0 | 80.2 | 40.7 | 113 | 3.52 | 22.5 | |
| 1,4-Dichlorobenzene | 74 | 10 | 100.0 | 0 | 73.7 | 39.6 | 99.9 | 4.50 | 24.6 | |
| 2,4-Dinitrotoluene | 73 | 10 | 100.0 | 0 | 73.1 | 40.8 | 113 | 6.00 | 25.3 | |
| N-Nitrosodi-n-propylamine | 79 | 10 | 100.0 | 0 | 79.0 | 51.2 | 111 | 2.82 | 23.6 | |
| 4-Nitrophenol | 140 | 10 | 200.0 | 0 | 69.4 | 15.7 | 86.9 | 7.95 | 34.7 | |
| Pentachlorophenol | 120 | 20 | 200.0 | 0 | 61.6 | 21.6 | 104 | 4.01 | 32.8 | |
| Phenol | 140 | 10 | 200.0 | 0 | 68.3 | 28.6 | 71.7 | 3.88 | 25.5 | |
| Pyrene | 79 | 10 | 100.0 | 0 | 78.8 | 54.2 | 128 | 7.56 | 31.4 | |
| 1,2,4-Trichlorobenzene | 76 | 10 | 100.0 | 0 | 75.7 | 40.9 | 101 | 6.10 | 25.9 | |
| Surr: 2-Fluorophenol | 150 | | 200.0 | | 73.3 | 12.1 | 85.8 | 0 | 0 | |
| Surr: Phenol-d5 | 140 | | 200.0 | | 72.3 | 17.7 | 65.8 | 0 | 0 | S |
| Surr: 2,4,6-Tribromophenol | 140 | | 200.0 | | 70.9 | 26 | 138 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 88 | | 100.0 | | 88.0 | 47.5 | 119 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 83 | | 100.0 | | 83.2 | 48.1 | 106 | 0 | 0 | |

**Qualifiers:**

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID | **lcsd-15747** | SampType: **LCSD** | | TestCode: **EPA Method 8270C: Semivolatiles** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS02** | Batch ID: **15747** | | RunNo: **21803** | | | | | |
| *Prep Date:* | ***10/7/2014*** | *Analysis Date:* ***10/9/2014*** | | *SeqNo:* ***640786*** | *Units:* **µg/L** | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 4-Terphenyl-d14 | 81 | | 100.0 | | 80.9 | 44 | 113 | 0 | 0 | |

**Qualifiers:**

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- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
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- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID | **MB-15770** | SampType: **MBLK** | | | TestCode: **EPA Method 7470: Mercury** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: **15770** | | | RunNo: **21753** | | | | | |
| Prep Date: | **10/7/2014** | Analysis Date: **10/8/2014** | | | SeqNo: **639033** | | Units: **mg/L** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID | **LCS-15770** | SampType: **LCS** | | | TestCode: **EPA Method 7470: Mercury** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: **15770** | | | RunNo: **21753** | | | | | |
| Prep Date: | **10/7/2014** | Analysis Date: **10/8/2014** | | | SeqNo: **639034** | | Units: **mg/L** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Mercury | 0.0051 | 0.00020 | 0.005000 | 0 | 103 | 80 | 120 | | | |

**Qualifiers:**

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- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **MB-15825** | SampType: **MBLK** | TestCode: **EPA 6010B: Total Recoverable Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **15825** | RunNo: **21801** |
| Prep Date: **10/9/2014** | Analysis Date: **10/10/2014** | SeqNo: **640639** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.020 | | | | | | | | |
| Barium | ND | 0.020 | | | | | | | | |
| Cadmium | ND | 0.0020 | | | | | | | | |
| Calcium | ND | 1.0 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Lead | ND | 0.0050 | | | | | | | | |
| Magnesium | ND | 1.0 | | | | | | | | |
| Potassium | ND | 1.0 | | | | | | | | |
| Selenium | ND | 0.050 | | | | | | | | |
| Silver | 0.010 | 0.0050 | | | | | | | | |
| Sodium | ND | 1.0 | | | | | | | | |

| Sample ID **LCS-15825** | SampType: **LCS** | TestCode: **EPA 6010B: Total Recoverable Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **15825** | RunNo: **21801** |
| *Prep Date:* ***10/9/2014*** | *Analysis Date:* ***10/10/2014*** | *SeqNo:* ***640640*** *Units:* ***mg/L*** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.52 | 0.020 | 0.5000 | 0 | 104 | 80 | 120 | | | |
| Barium | 0.49 | 0.020 | 0.5000 | 0 | 98.9 | 80 | 120 | | | |
| Cadmium | 0.49 | 0.0020 | 0.5000 | 0 | 98.9 | 80 | 120 | | | |
| Calcium | 52 | 1.0 | 50.00 | 0 | 104 | 80 | 120 | | | |
| Chromium | 0.48 | 0.0060 | 0.5000 | 0 | 96.8 | 80 | 120 | | | |
| Lead | 0.49 | 0.0050 | 0.5000 | 0 | 97.6 | 80 | 120 | | | |
| Magnesium | 51 | 1.0 | 50.00 | 0 | 103 | 80 | 120 | | | |
| Potassium | 49 | 1.0 | 50.00 | 0 | 98.8 | 80 | 120 | | | |
| Selenium | 0.50 | 0.050 | 0.5000 | 0 | 100 | 80 | 120 | | | |
| Silver | 0.10 | 0.0050 | 0.1000 | 0 | 102 | 80 | 120 | | | B |
| Sodium | 51 | 1.0 | 50.00 | 0 | 101 | 80 | 120 | | | |

**Qualifiers:**

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- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1410102**

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **mb-1** | SampType: **MBLK** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R21715** | RunNo: **21715** | | | | | | | |
| Prep Date: | Analysis Date: **10/6/2014** | SeqNo: **637458** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | ND | 20 | | | | | | | | |

| Sample ID **lcs-1** | SampType: **LCS** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R21715** | RunNo: **21715** | | | | | | | |
| Prep Date: | Analysis Date: **10/6/2014** | SeqNo: **637459** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | 83 | 20 | 80.00 | 0 | 103 | 90 | 110 | | | |

| Sample ID **mb-2** | SampType: **MBLK** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R21715** | RunNo: **21715** | | | | | | | |
| Prep Date: | Analysis Date: **10/6/2014** | SeqNo: **637474** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | ND | 20 | | | | | | | | |

| Sample ID **lcs-2** | SampType: **LCS** | TestCode: **SM2320B: Alkalinity** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R21715** | RunNo: **21715** | | | | | | | |
| Prep Date: | Analysis Date: **10/6/2014** | SeqNo: **637475** | Units: **mg/L CaCO3** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Total Alkalinity (as CaCO3) | 81 | 20 | 80.00 | 0 | 102 | 90 | 110 | | | |

**Qualifiers:**

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
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- O RSD is greater than RSDlimit
- R *RPD outside accepted recovery limits*
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- *RL Reporting Detection Limit*

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1410102

*23-Oct-14*

**Client:** Western Refining Southwest, Inc.

**Project:** Injection Well 4th QTR 10-1-14

| Sample ID **MB-15759** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **15759** | RunNo: **21752** |
| Prep Date: **10/7/2014** | Analysis Date: **10/8/2014** | SeqNo: **638741** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID **LCS-15759** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **15759** | RunNo: **21752** |
| Prep Date: **10/7/2014** | Analysis Date: **10/8/2014** | SeqNo: **638742** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1010 | 20.0 | 1000 | 0 | 101 | 80 | 120 | | | |

**Qualifiers:**

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- H Holding times for preparation or analysis exceeded
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- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Western Refining Southw  Work Order Number: 1410102  RcptNo: 1

Received by/date: LM 10/02/14

Logged By: Anne Thorne  10/2/2014 6:50:00 AM  Anne Thorne

Completed By: Anne Thorne  10/2/2014  Anne Thorne

Reviewed By:  10/02/14

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 2. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 4. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 5. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 6. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 7. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 8. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 9. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 10. VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA Vials ☐ |
| 11. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 13. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 14. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 15. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 2,12 (2 or >12 unless noted)

Adjusted? NO

Checked by:

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.3 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: 10-1-14
Injection Well 4th QTR

Project #:

Project Manager:

Sampler: Bob

On Ice: ☐ No

Sample Temperature:


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1410182 |
|---|---|---|---|---|---|---|
| 10-1-14 | 10:00 | H2O | Inj. well | 3-VOA | HCl | -001 |
| | | | | 1-Liter | amber | -002 |
| | | | | 1-500ml | | -003 |
| | | | | 1-500ml | | -004 |
| | | | | 1-125 ml | $H_2SO_4$ | -005 |
| | | | | 1-500 ml | $HNO_3$ | -006 |
| | | | | 1-500ml | NaOH | -007 |
| | | | | 1-500ml | ZN-Acetate | -008 |

Analysis Request

| BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | [redacted] TDS | [redacted] Back up | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals Ca, Mg, Na, K | Anions (F,Cl,$NO_3$,$NO_2$,$PO_4$,$SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | Ignitability, Corrosivity | Reactivity | Ec, pH, SAR, Alk, Cl | Sulfides | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | |
| | | | | | | | | | | | X | | | | |
| | | | | X | | | | | | | | | X | | |
| | | | | | X | | | | | | | | | | |
| | | | | | | X | | | | | | | | | |
| | | | | | | | | | | | | X | | | |
| | | | | | | | | | | | | | | X | |

| Date: | Time: | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 10-1-14 | 1421 | Robert Krakow | Christa Waller | 10/1/14 | 1421 |
| 10/1/14 | 1815 | Christa Waller | | 10/02/14 | 0650 |

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Appendix D
# Closure Plan

# Western Refinery Southwest Inc.
# Bloomfield Terminal
# Waste Disposal Well (WDW) #2

## Closure Plan

In accordance with Rule 19.15.25 NMAC the following information describes the possible closure plan which would entail plugging and abandoning the proposed well bore and reclaiming the surface location to pre-drill status. This is Western's standard closure procedure.

All closure activities will include proper documentation and be available for review upon request. All required paperwork (sundry notices) will be submitted to NMOCD for approval prior to any field work taking place. All plug and abandon activities are intended to protect fresh water, public health and the environment.

**General Plan**

1. Notify NMOCD
2. Note: verify all cement volumes based on actual slurry to be pumped.
3. Review any COA's from NMOCD

Procedure

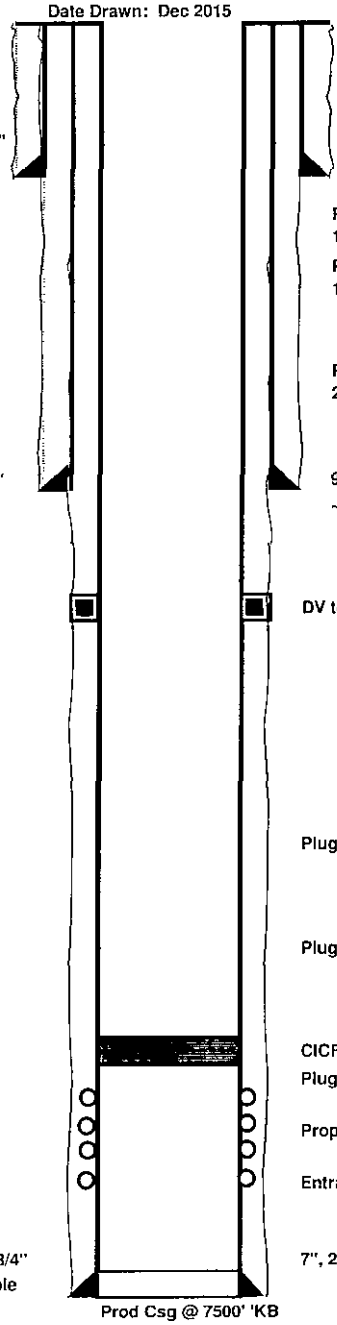
1 Move-in, rig up pulling unit. Pump & pit. Half tank for cement returns.
2 Hold safety meeting with rig crew and related personnel explaining the procedure and outlining potential hazards.
3 ND WH & NU BOP
4 TIH w/ CICR & set at ~ 7265'.
5 Load hole and circulate clean with fresh water.
6 Load tubing and pressure test tubing to 1000 psi.
7 Pull stinger out of CICR enough to load hole w/ water and circulate clean. Test casing to 500 psi.
8 Plug #1 (7265'-7483'). Mix & pump 85 sx (100 cf) of Class B neat cement. Sting out of retainer leaving 50' of cement on top of retainer. Note. Cement volumes will be adjusted if alternate but comparable cement is used (based on vendor selection). Volumes estimated using 100% excess.
9 Pull up hole.
10 Spot plug #2 in a balanced plug. Plug #2 Dakota: (6099'–6199'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.

11 Pull up hole & WOC. TIH & tag TOC.
12 Spot plug #3 in a balanced plug. Plug #3 Gallup (5549'-5649'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
13 Pull up hole & WOC. TIH & tag TOC.
14 Spot plug #4 in a balanced plug. Plug #4 Mesaverde (3285'-4087'). Mix & pump 150 sx (177 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
15 Pull up hole & WOC. TIH & tag TOC.
16 Spot plug #5 in a balanced plug. Plug #5 Chacra (2638'-2738'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
17 Pull up hole & WOC. TIH & tag TOC.
18 Spot plug #6 in a balanced plug. Plug #6 Pictured Cliffs (1668'-1768'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
19 Pull up hole & WOC. TIH & tag TOC.
20 Spot plug #7 in a balanced plug. Plug #7 Fruitland (1153'-11253'). Mix & pump 30 sx (35.4 cf) of Class B neat cement. Calculated cement volumes to include extra 50' of cement.
21 Pull up hole & WOC. TIH & tag TOC.
22 Spot plug #8 in a balanced plug. Plug #8 Surface Plug (350'-surface). Mix & pump 66 sx (77.9 cf) of Class B neat cement.
23 Fill up inside of casing w/ additional cement as needed to top off.
24 ND BOP & cut off well head.
25 Install P&A marker and cut off anchors.
26 RD & release rig and related equipment.
27 Remove all surface/production equipment.
28 Re-contour and re-claim surface/location as per NMOCD approved Reclamation plan.

| | | | |
|---|---|---|---|
| Well/Facility: | WDW #2 | Well Status: | Proposed P&A |
| Operator: | Western Refinery | Orig Oper: | |
| Lease/Op Agmt: | | Inj Interval: | |
| Field: | Entrada | API #: | |
| County: | San Juan | GR/KB: | |
| State: | NM | TD: | Proposed 7500' |
| Spud: | | PBTD: | |
| Comp. Date: | | WI: | |
| 1st Prod: | | NRI: | |
| Xmas tree: | | | |
| Surface Loc: | 2028' fnl & 111' fel | | |
| Sec-Twn-Rge: | Sec 27/T29N/11W | | |
| Comments: | | | |

Date Drawn: Dec 2015

WALSH ENGINEERING FARMINGTON, NM




Plug #8 surface plug: 350' to surface (70 sx/82.6 cf)

13-3/8", 48#, H40 at ~ 350'

Plug #7 Fruitland: 1153'-1253' (30 sx/35.4 cf)

Plug #6 Pictured Cliffs: 1668'-1768' (30 sx/35.4 cf)

Plug #5 Chacra: 2638'-2738 (30 sx/35.4 cf)

9-5/8", 36#, J55 ~ 3600'

Plug #4 Mesaverde: 3285'-4087' (150 sx/177 cf)

DV tool at 4000' KB

Plug #3 Gallup: 5549-5649' (30 sx/35.4 cf)

Plug #2 Dakota: 6099'-6199' (30 sx/35.4 cf)

CICR: 7265

Plug #1 7265' - 7483' (85 sx/100 cf)

Proposed Injection Zone:

Entrada Sandstone: 7315' - 7483'

7", 23#, J55

| | | Geologic Markers | |
|---|---|---|---|
| | | MD | Formation |
| | | Surface | Quaternary Alluv |
| | | 10' | Nacimiento |
| | | 515' | Ojo Alamo |
| | | 625' | Kirtland |
| | | 1203' | Fruitland |
| | | 1718' | Pictured Cliffs |
| | | 1880' | Lewis |
| | | 2660' | Huerfanito Bentonite |
| | | 2688' | Chacra |
| | | 2877' | Lower Lewis |
| | | 3335' | Cliff House |
| | | 3394' | Menefee |
| | | 4037' | Point Lookout |
| | | 4423' | Mancos Shale |
| | | 5292' | Niobrara A |
| | | 5394' | Niobrara B |
| | | 5517' | Niobrara C |
| | | 5599' | Gallup |
| | | 5842' | Juana Lopez |
| | | 5965' | Carlile |
| | | 6060' | Greenhorn |
| | | 6116' | Graneros |
| | | 6149' | Dakota |
| | | 6365' | Burro Canyon |
| | | 6411' | Morrison |
| | | 7046' | Bluff Sandstone |
| | | 7164' | Wanakah |
| | | 7287' | Todilto |
| | | 7315' | Endrada |
| | | 7483' | Chinle |
| | | 7500' | Proposed TD |

| Injection String Detail - PL 4-1/2", 10.5 ppf, J55 | | | |
|---|---|---|---|
| | *Length* | *Top* | *Bottom* |
| KB Adjustment | 15.00 | 0 | 15.00 |
| 4-1/2" PL casing/tubing | | 15.00 | 15.00 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**WALSH** ENGINEERING & PRODUCTION CORP.

## Workover Cost Estimate

**Western Refinery Southwest, Inc.**
***AUTHORITY FOR EXPENDITURE***

Date: 2/2/2016

***Well Name*: WDW #2**
***Location*: Sec 27, T29N, R11W, San Juan, NM** ***Objective*: Permanently P&A Wellbore**

| | Tangible | Intangible | Total |
|---|---|---|---|
| **I. Workover Costs** | | | |
| Anchors, and Misc. | | | |
| Completion Rig (18 hrs @ $250/hr, includes Mob-de-Mob, crew travel) | | 29,500 | 29,500 |
| Completion Fluids/Water hauling (pump truck) | | | |
| Cased Hole Services (Including CICR) | | 7,200 | 7,200 |
| Cement | | 24,650 | 24,650 |
| Tubing Head and Well Connection Fittings | | | |
| Tubing ( 480 ft @ 3.30 $/ft.) | | | |
| Sucker Rods ( 50 rods @ 60 $/rod) | | | |
| Down hole pump | | | |
| Pumping equipment (Polish rod, tbg anchor, ect) | | | |
| Rentals (tanks, etc) | | 1,720 | 1,720 |
| Trucking | | 5,100 | 5,100 |
| Surface Facility Installation | | | |
| Restore Location | | | |
| Well Site Supervision | | 4,100 | 4,100 |
| Engineering | | 1,000 | 1,000 |
| Bits | | | |
| Labor & Trucking to remove surface equipment | | | |
| Pipelines and Installation | | | |
| Tank and Fittings | | | |
| Disposal Costs | | 1,250 | 1,250 |
| Meter | | | |
| Surface Reclamation | | 5,125 | 5,125 |
| P&A marker | | 135 | 135 |
| **Workover Costs** | **0** | **79,780** | **79,780** |
| 10% Contingency | 0 | 7,978 | 7,978 |
| **Total Workover Costs** | **0** | **87,758** | **87,758** |

Prepared By: John C. Thompson
Date: 2/2/2016

Working Interest Owners

ESTIMATED COSTS ONLY--Each participating Owner to pay Proportionate Share of Actual Well Costs Subject to Operating Agreement

# C-108 Review Checklist:

Received 03/07/16 First C-108 Application | Add. Request: — | Reply Date: — | Suspended: 03/07/16 [Ver 16]

**ORDER TYPE:** WFX / PMX / (SWD) Number: 1629 Order Date: 06/01/2016 Legacy Permits/Orders: In Conjunction with WQCC application for Class I (Non-Hazardous) Disposal

Well No. 2 Well Name(s): Waste Disposal Well

API : 30-0 45-35747 Spud Date: TBD New or Old: New Well (*UIC Class II Primacy 03/07/1982*)

Footages 2028' FNL / 111' FEL ① Lot — or Unit H Sec 27 Tsp 29N Rge 11W County San Juan

① First Application footages: 2019' FNL / 110' FEL - changes did not impact notice or AOR wells

General Location: At decommissioned Bloomfield Refinery Pool: SWD; Entrada Pool No.: 96436

BLM 100K Map: Navajo Reservoir Operator: Western Refining Southwest, Inc [Bloomfield, NM Loparted as terminal] OGRID: 267595 [EBWff - Entrada] Contact: Allen Hains, Western Refining

FA bonding will be based on

**COMPLIANCE RULE 5.9:** Total Wells: — Inactive: — Fincl Assur: — Compl. Order? No **IS 5.9 OK?** — (see note ②) Date: 06/01/2016

**WELL FILE REVIEWED** ✓ ② Current Status: APD pending; Class I (non-haz) permit pending

**WELL DIAGRAMS: NEW:** Proposed ✓ or **RE-ENTER:** Before Conv. ○ After Conv. ○ Logs in Imaging: NA

Planned Rehab Work to Well: NA - new well

| Well Construction Details | Sizes (in) Borehole / Pipe | Setting Depths (ft) | Stage Tool | Cement Sx or Cf | Cement Top and Determination Method |
|---|---|---|---|---|---|
| Planned ✓ or Existing — Surface | 17 1/2 / 13 3/8 | 0 to 350 | Stage Tool | 394 | Cir. to surf |
| Planned — or Existing — Interm/Prod | 12 1/4 / 9 5/8 | 0 to 3600 | DV tool | 857 | Cir. to surf |
| Planned ✓ or Existing — Interm/Prod | 8 3/4 / 7 | 0 to 7500 | CBL for T.I.C. | 808 | Cir. to surf — DV for Prod casing |
| Planned — or Existing — Prod/Liner | — | — | — | — | — |
| Planned — or Existing — Liner | — | — | — | — | — |
| Planned ✓ or Existing — OH / (PERF) | 8 3/4 / 7 | 7315 to 7483 | Inj Length 168 | | |

| Injection Lithostratigraphic Units: | Depths (ft) | Injection or Confining Units | Tops |
|---|---|---|---|
| Adjacent Unit: Litho. Struc. Por. | | Morrison | 6411 |
| Confining Unit: (Litho.) (Struc.) Por. | ±0 | Todilto LS | 7287 |
| Proposed Inj Interval TOP: | 7315 | Entrada | 7315 |
| Proposed Inj Interval BOTTOM: | 7483 | — | — |
| Confining Unit: (Litho.) Struc. Por. | ±0 | Chinle | 7483 |
| Adjacent Unit: Litho. Struc. Por. | | San Andres | — |

**Completion/Operation Details:**

Drilled TD — PBTD —

NEW TD 7500 NEW PBTD —

NEW Open Hole ○ or NEW Perfs ✓

Tubing Size 4 1/2 in. Inter Coated? Yes

Proposed Packer Depth 7265 ft

Min. Packer Depth 7215 (100-ft limit)

Proposed Max. Surface Press. 2000 psi

Admin. Inj. Press. 1463 (0.2 psi per ft)

## AOR: Hydrologic and Geologic Information

**POTASH:** R-111-P NA Noticed? NA **BLM Sec Ord** NA **WIPP** NA Noticed? NA **Salt/Salado** T: NA B: NA **NW: Cliff House fm** 3335

**FRESH WATER:** Aquifer Alluvial (San Juan R.) Ojo Alamo formation Max Depth <1000' **HYDRO AFFIRM STATEMENT By Qualified Person** ✓

**NMOSE Basin:** San Juan **CAPITAN REEF:** thru — adj — NA ✓ **No. GW Wells in 1-Mile Radius?** 1 FW Analysis? NA

**Disposal Fluid:** Formation Source(s) Onsite - treatment and Analysis? Yes On Lease ○ Operator Only ✓ or Commercial ○

**Disposal Interval:** Inject Rate (Avg/Max BWPD): 3500 / 8000 Oil brought to terminal Protectable Waters? Low prob. Source: Extrap. from >10 miles (SWD well) System: Closed or Open

**HC Potential:** Producing Interval? No Formerly Producing? No Method: Logs/DST/P&A/Other Historical exploration 2-Mile Radius Pool Map — No Entrada w/in 2 mile

1-M Radius Map - Yes

**AOR Wells:** 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: Ø - 1/2 mile Horizontals? Ø

**Penetrating Wells: No. Active Wells** Ø (1/2 mile) Num Repairs? — on which well(s)? ① SWD / ① 1-mile AOR Diagrams? NA

**Penetrating Wells: No. P&A Wells** Ø (1/2 mile) Num Repairs? — on which well(s)? — / Ashcraft SWD #1 30-045-30788 (XTO) Diagrams? NA

**NOTICE:** Newspaper Date 12/14/15 Mineral Owner Applicant Surface Owner Applicant N. Date 12/14/15

**RULE 26.7(A): Identified Tracts?** Yes Affected Persons: Burlington and XTO; Holcomb Oil & Gas N. Date 12/17/15

**Order Conditions:** Issues: Unknown water quality of injection interval; site-specific HC potential

**Add Order Cond:** - Added to COA for APD - TDS sample of formation water / mudlog / SRT after any well workover - stimulation / CBL for Prod. Casing (DV tool)

**P&A Well List (One-mile Radius +) - Western Refining SW, Inc. C-108 Application and Class I (non-haz) Application**

| API WELL # | Well Name | Well # | Operator Name | Type | Stat | Sur Owner | UL | Sec | Twp | N/S | Rng | W/E | Footage | N/S | Footage | E/W | TVD (ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30-045-08125-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | B | 21 | 29 | N | 11 | W | 850 | N | 1750 | E | 1693 | |
| 30-045-07972-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | M | 21 | 29 | N | 11 | W | 990 | S | 560 | W | 1703 | |
| 30-045-08024-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | F | 21 | 29 | N | 11 | W | 2515 | N | 1410 | W | 704 | |
| 30-045-08025-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | O | P | P | F | 21 | 29 | N | 11 | W | 2440 | N | 1520 | W | 660 | |
| 30-045-08027-00-00 | PRE-ONGARD WELL | 009 | PRE-ONGARD WELL OPERATOR | O | P | P | G | 21 | 29 | N | 11 | W | 2430 | N | 1920 | E | 700 | |
| 30-045-08051-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | F | 21 | 29 | N | 11 | W | 1650 | N | 1830 | W | 1915 | |
| 30-045-30587-00-00 | SATEGNA | 001R | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G | P | P | M | 21 | 29 | N | 11 | W | 1040 | S | 770 | W | 1744 | |
| 30-045-08036-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | E | 21 | 29 | N | 11 | W | 1650 | N | 330 | E | 630 | |
| 30-045-08137-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | A | 21 | 29 | N | 11 | W | 568 | N | 301 | E | 795 | |
| 30-045-08162-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | W | P | P | B | 21 | 29 | N | 11 | W | 100 | N | 2100 | W | 300 | |
| 30-045-08136-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | A | 22 | 29 | N | 11 | W | 660 | N | 785 | E | 767 | |
| 30-045-08166-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | C | 22 | 29 | N | 11 | W | 175 | N | 1570 | W | 700 | |
| 30-045-08169-00-00 | PRE-ONGARD WELL | 003 | PRE-ONGARD WELL OPERATOR | G | P | P | D | 22 | 29 | N | 11 | W | 200 | N | 200 | W | 540 | |
| 30-045-08109-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | D | 22 | 29 | N | 11 | W | 905 | N | 1155 | W | 700 | |
| 30-045-32453-00-00 | PRE-ONGARD WELL | 007 | PRE-ONGARD WELL OPERATOR | G | P | P | G | 22 | 29 | N | 11 | W | 2400 | N | 2310 | E | 1036 | |
| 30-045-08086-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | D | 22 | 29 | N | 11 | W | 1278 | N | 1027 | W | 1350 | |
| 30-045-07959-00-00 | GRACE PEARCE | 001 | JOHN C PICKETT | G | P | P | O | 22 | 29 | N | 11 | W | 990 | S | 1650 | E | 1620 | |
| 30-045-07961-00-00 | HARTMAN | 001 | MANANA GAS INC | G | P | P | P | 22 | 29 | N | 11 | W | 990 | S | 990 | E | **6310** | Dakota target |
| 30-045-08138-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | B | 22 | 29 | N | 11 | W | 500 | N | 1800 | E | 620 | |
| 30-045-08045-00-00 | HARE | 001 | KENDALL & ASSOCIATES | O | P | P | G | 23 | 29 | N | 11 | W | 1980 | N | 1650 | E | 730 | |
| 30-045-08120-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | D | 23 | 29 | N | 11 | W | 990 | N | 990 | W | 1130 | |
| 30-045-08010-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | I | 23 | 29 | N | 11 | W | 2275 | S | 685 | E | 1478 | |
| 30-045-08116-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | C | 23 | 29 | N | 11 | W | 990 | N | 1650 | W | 1490 | |
| 30-045-08165-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | G | P | P | B | 23 | 29 | N | 11 | W | 150 | N | 1980 | E | 800 | |
| 30-045-08110-00-00 | PRE-ONGARD WELL | 004 | PRE-ONGARD WELL OPERATOR | O | P | P | B | 23 | 29 | N | 11 | W | 990 | N | 1650 | E | 802 | |
| 30-045-08064-00-00 | PRE-ONGARD WELL | 005 | PRE-ONGARD WELL OPERATOR | G | P | P | E | 23 | 29 | N | 11 | W | 1620 | N | 300 | W | 650 | |
| 30-045-25887-00-00 | EARL B SULLIVAN GAS COM B | 001 | BP AMERICA PRODUCTION COMPANY | G | P | P | I | 23 | 29 | N | 11 | W | 1650 | S | 1190 | E | 2858 | |
| 30-045-08061-00-00 | HARE | 001 | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G | P | P | G | 23 | 29 | N | 11 | W | 1650 | N | 1650 | E | 1766 | |
| 30-045-07985-00-00 | PEARCE GAS COM | 001 | BP AMERICA PRODUCTION COMPANY | G | P | S | K | 23 | 29 | N | 11 | W | 1470 | S | 1775 | W | **6274** | Dakota target |
| 30-045-08009-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | S | K | 23 | 29 | N | 11 | W | 2210 | S | 1660 | W | 1507 | |
| 30-045-08056-00-00 | HARE | 003 | KENDALL & ASSOCIATES | O | P | P | G | 23 | 29 | N | 11 | W | 1686 | N | 2239 | E | 735 | |
| 30-045-08034-00-00 | HARE | 002 | KENDALL & ASSOCIATES | O | P | P | G | 23 | 29 | N | 11 | W | 2310 | N | 1650 | E | 738 | |
| 30-045-08032-00-00 | SEITZINGER | 001 | ALLEN ORION | O | P | P | H | 23 | 29 | N | 11 | W | 2310 | N | 990 | E | 750 | |
| 30-045-24517-00-00 | HARE | 004 | KENDALL & ASSOCIATES | O | P | P | G | 23 | 29 | N | 11 | W | 2020 | N | 2140 | E | 1000 | |
| 30-045-08047-00-00 | HARE GAS COM B | 001 | XTO ENERGY, INC | G | P | P | G | 23 | 29 | N | 11 | W | 1825 | N | 2330 | E | **6382** | Dakota target |
| 30-045-07776-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | S | M | 26 | 29 | N | 11 | W | 330 | S | 330 | W | 1758 | |
| 30-045-07870-00-00 | PRE-ONGARD WELL | 00X | PRE-ONGARD WELL OPERATOR | G | P | P | G | 26 | 29 | N | 11 | W | 1782 | N | 1570 | E | 1442 | |
| 30-045-29107-00-00 | PRE-ONGARD WELL | 001X | PRE-ONGARD WELL OPERATOR | G | P | P | G | 26 | 29 | N | 11 | W | 1806 | N | 1570 | E | 850 | Junk in hole; P&A |
| 30-045-22639-00-00 | DELO | 011 | GENERAL MINERALS CORP | G | P | F | P | 26 | 29 | N | 11 | W | 790 | S | 790 | E | 1945 | |
| 30-045-07883-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | G | P | P | H | 27 | 29 | N | 11 | W | 1450 | N | 1120 | E | 1701 | |
| 30-045-07903-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | F | M | 27 | 29 | N | 11 | W | 990 | S | 990 | W | 1747 | |
| 30-045-07825-00-00 | DAVIS GAS COM F | 001 | BP AMERICA PRODUCTION COMPANY | G | P | P | I | 27 | 29 | N | 11 | W | 1850 | S | 1190 | E | 6365 | Dakota target |
| 30-045-07812-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | I | 27 | 29 | N | 11 | W | 1650 | S | 990 | E | 1804 | |
| 30-045-23553-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | H | 27 | 29 | N | 11 | W | 1545 | N | 1140 | E | NA | Never spud |
| 30-045-07896-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | C | 27 | 29 | N | 11 | W | 920 | N | 1520 | W | 800 | |
| 30-045-21732-00-00 | GARLAND B | 001R | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G | P | F | M | 27 | 29 | N | 11 | W | 790 | S | 860 | W | 1810 | |
| 30-045-23554-00-00 | DAVIS GAS COM G | 001 | XTO ENERGY, INC | G | P | P | I | 27 | 29 | N | 11 | W | 1805 | S | 1135 | E | 2951 | |
| 30-045-07849-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | P | E | 28 | 29 | N | 11 | W | 2310 | N | 990 | W | 1645 | |
| 30-045-07895-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | G | P | P | A | 28 | 29 | N | 11 | W | 1000 | N | 885 | E | 1623 | |
| 30-045-07762-00-00 | PRE-ONGARD WELL | 003 | PRE-ONGARD WELL OPERATOR | G | P | S | A | 28 | 29 | N | 11 | W | 1080 | N | 940 | E | 670 | |
| 30-045-34466-00-00 | MASDEN GAS COM | 001F | XTO ENERGY, INC | G | P | P | F | 28 | 29 | N | 11 | W | 1975 | N | 2275 | W | 710 | |
| 30-045-07862-00-00 | PRE-ONGARD WELL | 003 | PRE-ONGARD WELL OPERATOR | G | P | S | G | 28 | 29 | N | 11 | W | 1650 | N | 1650 | E | 1610 | |
| 30-045-07810-00-00 | MANGUM | 003 | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G | P | P | J | 28 | 29 | N | 11 | W | 1650 | S | 1650 | E | 1748 | |

**P&A Well List (One-mile Radius +) - Western Refining SW, Inc. C-108 Application and Class I (non-haz) Application**

| API WELL # | Well Name | Well # | Operator Name | Type | Stat | Sur Owner | UL | Sec | Twp | N/S | Rng | W/E | Footage | N/S | Footage | E/W | TVD (ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30-045-25268-00-00 | SUMMIT | 010 | ENERGEN RESOURCES CORPORATION | G | P | F | G | 33 | 29 | N | 11 | W | 1650 | N | 1690 | E | 1564 | |
| 30-045-28407-00-00 | PRE-ONGARD WELL | 500 | PRE-ONGARD WELL OPERATOR | G | P | F | H | 33 | 29 | N | 11 | W | 1825 | N | 1100 | E | NA | Aband location |
| 30-045-07725-00-00 | SUMMIT | 004 | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G | P | F | A | 33 | 29 | N | 11 | W | 990 | N | 990 | E | 1752 | |
| 30-045-07621-00-00 | WITT | 001 | DUGAN PRODUCTION CORP | G | P | P | N | 33 | 29 | N | 11 | W | 860 | S | 1840 | W | 1595 | |
| 30-045-07648-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | G | P | F | J | 34 | 29 | N | 11 | W | 1520 | S | 1520 | E | 1792 | |
| 30-045-07674-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | F | J | 34 | 29 | N | 11 | W | 2640 | S | 2300 | E | 1910 | |
| 30-045-07675-00-00 | PRE-ONGARD WELL | 002 | PRE-ONGARD WELL OPERATOR | G | P | F | F | 34 | 29 | N | 11 | W | 2440 | N | 1520 | W | 1800 | |
| 30-045-07633-00-00 | PRE-ONGARD WELL | 001 | PRE-ONGARD WELL OPERATOR | G | P | F | N | 34 | 29 | N | 11 | W | 1070 | S | 2390 | W | 2002 | |
| 30-045-20752-00-00 | LEA ANN | 001 | CHAPARRAL OIL & GAS CO | G | P | F | E | 35 | 29 | N | 11 | W | 1850 | N | 790 | W | 1900 | |
| 30-045-25658-00-00 | CONGRESS | 014 | BURLINGTON RESOURCES OIL & GAS COMPANY LP | O | P | F | A | 35 | 29 | N | 11 | W | 445 | N | 953 | E | 6013 | Gallup target |

# New Mexico Office of the State Engineer

# Active & Inactive Points of Diversion

## (with Ownership Information)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(acre ft per annum)

(NAD83 UTM in meters)

| WR File Nbr | Sub basin | Use | Diversion | Owner | County | POD Number | Code | Grant | Source | q q q 6416 4 | Sec | Tws | Rng | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SJ 00394 | | DOM | 0 | PABLO D. QUINTANA | SJ | SJ 00394 - Expired | | | | 1 1 | 27 | 29N | 11W | 233260 | 4066010* |
| SJ 00700 | | DOM | 3 | EDD H. BROWN | SJ | SJ 00700 TD-30' | | | Shallow | 3 3 1 | 27 | 29N | 11W | 233147 | 4065507* |
| SJ 01804 | | DOM | 3 | KENNETH W. LARSEN | SJ | SJ 01804 - NG info | | | | 3 3 3 | 27 | 29N | 11W | 233119 | 4064713* |
| SJ 01808 | | POL | 0 | PLATEAU INC | SJ | SJ 01808 0-1 | | | Shallow | 2 4 2 | 27 | 29N | 11W | 234561 | 4065683* |
| | | | | | SJ | SJ 01808 0-2 | | | Shallow | 3 4 2 | 27 | 29N | 11W | 234361 | 4065483* |
| | | | | | SJ | SJ 01808 0-3 | | | Shallow | 4 4 2 | 27 | 29N | 11W | 234561 | 4065483* |
| | | | | | SJ | SJ 01808 0-4 | | | Shallow | 3 3 2 | 27 | 29N | 11W | 233956 | 4065491* |
| | | | | | SJ | SJ 01808 0-5 | | | Shallow | 1 1 3 | 26 | 29N | 11W | 234753 | 4065274* |
| | | | | | SJ | SJ 01808 0-6 | | | Shallow | 1 2 4 | 27 | 29N | 11W | 234347 | 4065283* |
| SJ 01845 | | DOM | 3 | JOHN SCHLISSIGEN | SJ | SJ 01845 - No info | | | | 1 1 | 27 | 29N | 11W | 233260 | 4066010* |
| SJ 02121 | | DOM | 3 | HUSKIE CHATTO | SJ | SJ 02121 - TD-30' | | | Shallow | 1 1 | 27 | 29N | 11W | 233260 | 4066010* |
| SJ 02148 | | DOM | 3 | CARROLL W. WOOTEN | SJ | SJ 02148 — in application | | | Shallow | 2 4 | 27 | 29N | 11W | 234448 | 4065184* |
| SJ 02210 | | DOM | 3 | DONALD C. LOONEY | SJ | SJ 02210 - TD-32' | | | Shallow | 1 1 | 27 | 29N | 11W | 233260 | 4066010* |
| SJ 02227 | | DOM | 3 | YOGI B. CHAVEZ | SJ | SJ 02227 — TD-27' | | | Shallow | 4 1 1 | 27 | 29N | 11W | 233359 | 4065909* |
| SJ 02231 | | DOM | 3 | DANIEL YELINEK | SJ | SJ 02231 | | | | 4 1 1 | 27 | 29N | 11W | 233359 | 4065909* |
| SJ 02664 | | POL | 0 | BLOOMFIELD REFINING COMPANY | SJ | SJ 02664 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-10 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |

Monitoring wells/recovery wells 25' or less

Monitoring & recovery wells at facility

*UTM location was derived from PLSS - see Help

(acre ft per annum) (R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

| WR File Nbr | Sub basin | Use | Diversion | Owner | County | POD Number | Code | Grant | Source | q q q 6 4 16 4 | Sec | Tws | Rng | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SJ | SJ 02664 S-2 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-3 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-4 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-5 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-6 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-7 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-8 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| | | | | | SJ | SJ 02664 S-9 | | | Shallow | 2 3 | 27 | 29N | 11W | 233639 | 4065202* |
| SJ 03588 | | STK | 3 | ROBERTA HENDERSON | SJ | SJ 03588 | | | Shallow | 2 1 1 | 27 | 29N | 11W | 233359 | 4066109* |
| SJ 03590 | | DOM | 0 | GARY WOODALL | SJ | SJ 03590 | | | | 2 1 1 | 27 | 29N | 11W | 233359 | 4066109* |

TD(s) 31' - 43'

SJ 03588 — 10' TD

SJ 03590 — Expired

**Record Count:** 28

**POD Search:**

**POD Basin:** San Juan

**PLSS Search:**

**Section(s):** 26, 27 **Township:** 29N **Range:** 11W

**Sorted by:** File Number

***UTM location was derived from PLSS - see Help**

## McMillan, Michael, EMNRD

**From:** John Thompson <john@walsheng.net>
**Sent:** Monday, January 04, 2016 10:23 AM
**To:** McMillan, Michael, EMNRD
**Subject:** RE: Western Refining Southwest Refining Co. SWD Well No.2 San Juan Co.

Western owns the surface.

---

**From:** McMillan, Michael, EMNRD [mailto:Michael.McMillan@state.nm.us]
**Sent:** Monday, January 04, 2016 9:31 AM
**To:** john@walsheng.net
**Subject:** Western Refining Southwest Refining Co. SWD Well No.2 San Juan Co.

John:
I could not figure out who owns the surface-have they been notified for the Western Refining Southwest Refining Co. SWD Well No.2?

Thank You

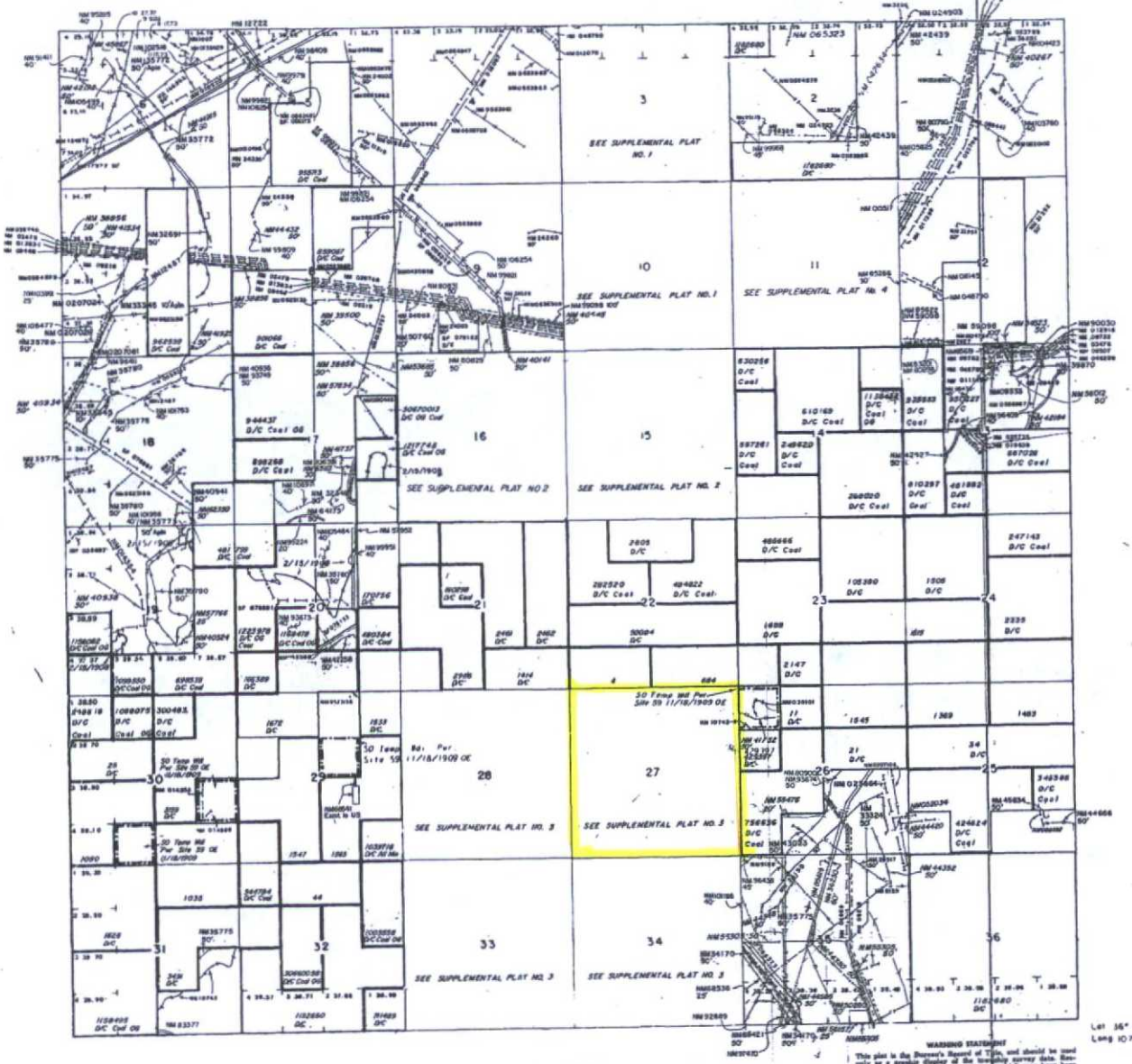

## Michael A. McMillan
Engineering and Geological Services Bureau, Oil Conservation Division
1220 South St. Francis Dr., Santa Fe NM 87505
O: 505.476.3448 F. 505.476.3462
Michael.mcmillan@state.nm.us

# TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM-I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MTP




INDEX TO SEGREGATED TRACTS

RESURVEY PENDING
GROUP NO 851 NM DATE 1/13/84

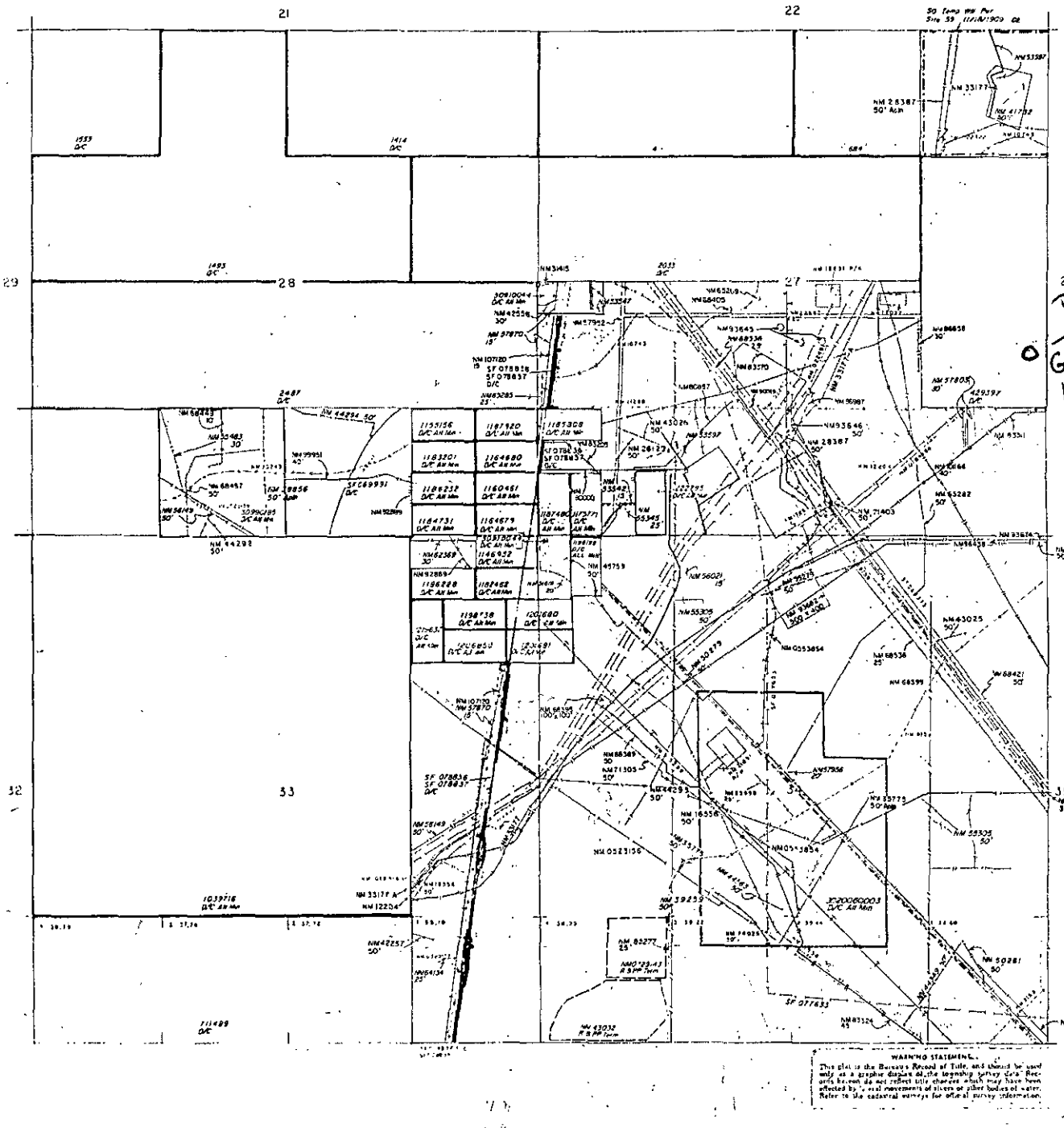
T 29 N
R 11 W
NMPM

# TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM-I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MTP
Suppl PLAT NO. 3




INDEX TO SEGREGATED TRACTS

| RESURVEY | ORIGINAL SURVEY | | | |
|---|---|---|---|---|
| TRACT NO. | T. | R. | SEC. | SUBDIVISION |
| | | | | |

FOR ORDERS AFFECTING DISPOSAL OR USE OF UNCLASSIFIED LANDS, WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS

R.S.P.P. Lands
NM 032943 Exp. Term 5/31/95
NM 43032 Exp. Term 12/15/1998

**RESURVEY PENDING**
GROUP NO 831 DATE 1/13/84

CURRENT TO

NMPM

# TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY —— 045
NM—I

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

OG PLAT

| INDEX TO SEGREGATED TRACTS | | | | |
|---|---|---|---|---|
| RESURVEY TRACT NO. | ORIGINAL SURVEY T | R | SEC | SUBDIVISION |
| | | | | |

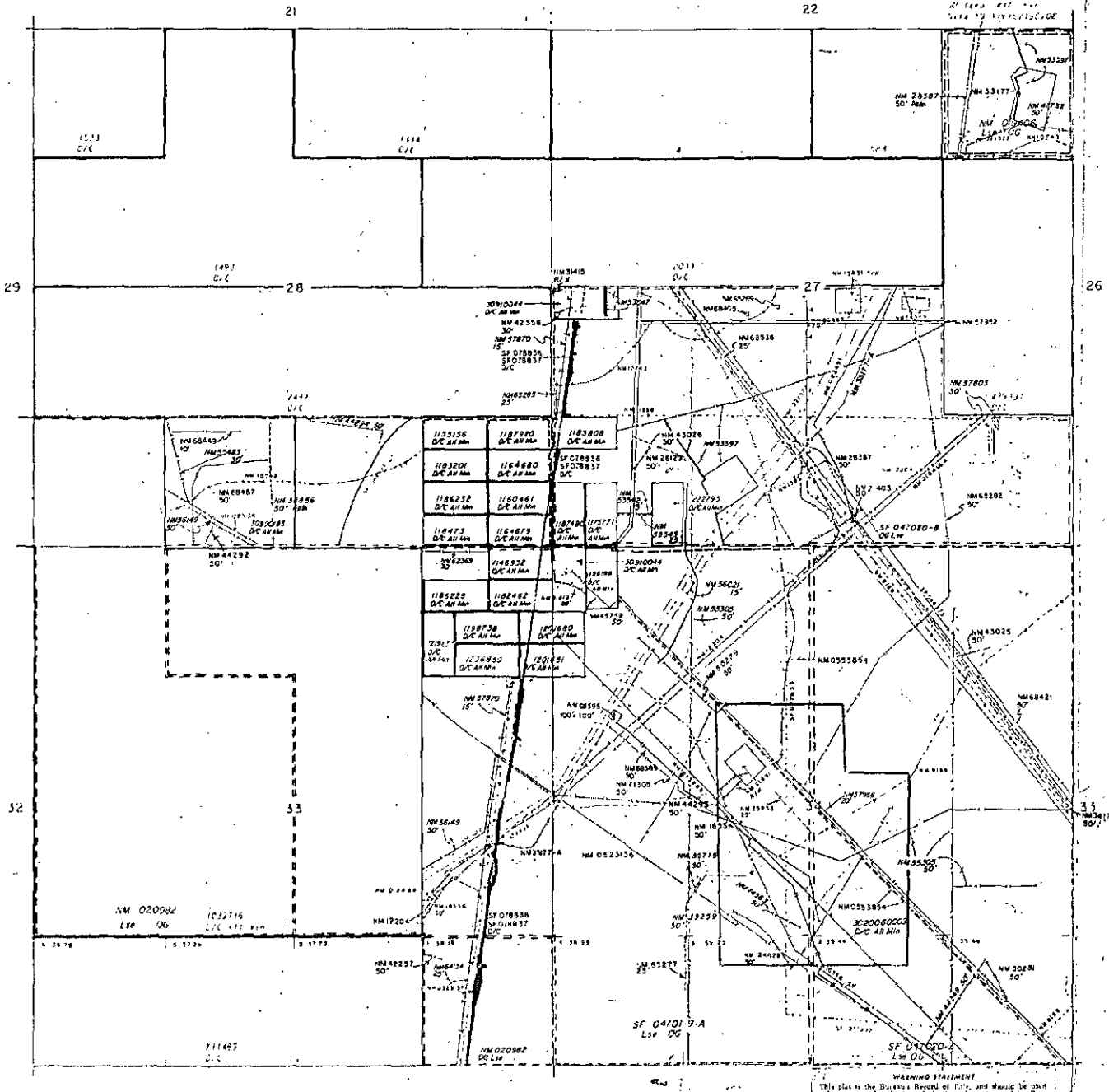
RESURVEY PENDING
GROUP NO 831 NM DATE 1/13/84

T 29 N
R 11 W
NMPM

# TOWNSHIP 29 NORTH, RANGE 11 WEST, OF THE NEW MEXICO PRIN. MERIDIAN, NEW MEXICO.

SAN JUAN COUNTY ——045

NM-I




STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

## O G PLAT
## Suppl PLAT NO. 3

INDEX TO SEGREGATED TRACTS

| RESURVEY TRACT NO. | ORIGINAL SURVEY T. | R. | SEC | SUBDIVISION |
|---|---|---|---|---|
| | | | | |

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS

KGS Kirtland west 3

Communitization Agreement

Com. Agr. No. SRM-1424
Sec. 33: SE¼

Com. Agr. No. SCR-8
Sec. 27: NE¼
Com. Agr. No. SRM-1402
Sec. 27: SE¼
Com. Agr. No. SCR-208
Sec. 33: NW¼
Com. Agr. No. NMQ(SF)35-87-329
Sec. 34: A ll
Com. Agr. No. (NMOS)35-87C-332
Sec. 28: SE¼

RESURVEY PENDING
GROUP NO. 831 NM DATE 1/13/84

| CURRENT TO | BY |
|---|---|
| | |

T 29 N
R 11 W
NMPM

## Goetze, Phillip, EMNRD

**From:** Goetze, Phillip, EMNRD
**Sent:** Friday, May 20, 2016 4:23 PM
**To:** 'Allen Hains'
**Cc:** Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD; John Thompson (john@walsheng.net)
**Subject:** Notification of Affected Persons; C-108 Application for WDW No. 2

Mr. Hains:

Per our conversation today, I was conducting a assessment of the amended C-108 application for the Waste Disposal Well No. 2 for Western Refining Southwest's facility near Bloomfield. For this application, I found no attached copies of notification for affected persons as required under NMAC. However, at your suggestion, I revisited the original C-108 application prepared by Walsh Engineering and submitted in the original effort in December 2015 (Application No. pMAM1600432778; logged in 01/04/216). For the record, the notification provided in this first submittal is sufficient to satisfy the notification requirements. Though the surface location between the two applications (as described in the published notice and letters to effected persons) has slightly changed (from 2019' FNL/110' to FEL 2028' FNL/111' FEL), this is not significant and does not impact either the parties to be noticed or AOR wells. Additionally, the published notice is accurate to those major items that are deemed critical to proper notification such as injection interval, rate of injection, applicant, and contact information. Thank you for your patience in this matter. PRG

Phillip R. Goetze, PG
Engineering Bureau
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Direct: 505.476.3466
E-mail: phillip.goetze@state.nm.us

## Goetze, Phillip, EMNRD

**From:** Powell, Brandon, EMNRD
**Sent:** Wednesday, May 18, 2016 3:04 PM
**To:** Perrin, Charlie, EMNRD; Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD; Goetze, Phillip, EMNRD
**Subject:** FW: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)
**Attachments:** Western approval cover sheet.docx

Gentlemen-

We are in the process of finalizing the APD approval for this well and hope to have it completed and scanned possibly tomorrow. Attached is the conditions page we are planning on attaching. Please review and provide any concerns or comments. The API for the well will be 30-045-35747.

Thank You

Brandon Powell
Office: (505) 334-6178 ext. 116
*"He who wishes to gain knowledge is wiser than he who thinks he has knowledge (unknown)"*

---

**From:** Perrin, Charlie, EMNRD
**Sent:** Tuesday, May 17, 2016 2:37 PM
**To:** Vermersch, Amy H, EMNRD <AmyH.Vermersch@state.nm.us>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
**Subject:** FW: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

---

**From:** Chavez, Carl J, EMNRD
**Sent:** Tuesday, May 17, 2016 2:13 PM
**To:** Hains, Allen <Allen.Hains@wnr.com>
**Cc:** Gallegos, Denise, EMNRD <Denise.Gallegos@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us>; Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>
**Subject:** RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Allen:

Hi. A few things Western needs to begin acting on are provided below.

1) Western needs to obtain the API# for the well from Brandon Powell in the Aztec District Office so OCD may post in its Public Notice. Once you get it, forward the number over to me as I am working with Jim G to get the draft DP posted in Newspapers on or before COB Friday on 5/20 with requested post in Albuq. Journal and Farmington Daily for Sunday 5/22.

2) Brandon needs to issue an approval of the C-101 and C-102 Forms and include a Condition of Approval in the C-101 Form that the Entrada Fm. must be tested for TDS to determine water quality before OCD can authorize injection. There is scarce water quality information for the Entrada in San Juan County. OCD has incorporated language in the Draft DP to also highlight this requirement.

3) Once numbers 1 and 2 above are satisfied, Western needs to submit its financial bond. The amount provided in the Application Closure Plan is acceptable. Please procure a WQCC Well Bond (click here) for the approved amount and submit to OCD Santa Fe (Denise Gallegos at (505) 476-3453 or E-mail: Denise.Gallegos@state.nm.us).

Thank you.

Carl J. Chavez, CHMM
Environmental Engineer
Oil Conservation Division- Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Phone: (505) 476-3490
Main Phone: (505) 476-3440
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: www.emnrd.state.nm.us/ocd
Why not prevent pollution, minimize waste, reduce operation costs, and move forward with the rest of the Nation? To see how, go to "Publications" and "Pollution Prevention" on the OCD Website.

---

**From:** Hains, Allen [mailto:Allen.Hains@wnr.com]
**Sent:** Tuesday, May 17, 2016 1:40 PM
**To:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
**Cc:** Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Robinson, Kelly <Kelly.Robinson@wnr.com>
**Subject:** RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Carl,

We appreciate your help with this permit.

Looking forward, are there requirements that Western can be working on during the OCD public notice period?

Thank you,

Allen S. Hains
Manager
Remediation Projects

Western Refining
123 W. Mills Ave.
El Paso, Texas 79901
915 534-1483
915 490-1594 (cell)

---

**From:** Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
**Sent:** Tuesday, May 17, 2016 7:22 AM
**To:** Donnelly, Patti <Patti.Donnelly@wnr.com>
**Cc:** Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Hains, Allen <Allen.Hains@wnr.com>; Robinson, Kelly

<Kelly.Robinson@wnr.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
**Subject:** RE: Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)



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Patti:

Received.

FYI: I am working with Jim Griswold to begin OCD's public notice in the newspapers soon.

Thank you.

Carl J. Chavez, CHMM
Environmental Engineer
Oil Conservation Division- Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Phone: (505) 476-3490
Main Phone: (505) 476-3440
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: www.emnrd.state.nm.us/ocd
Why not prevent pollution, minimize waste, reduce operation costs, and move forward with the rest of the Nation? To see how, go to "Publications" and "Pollution Prevention" on the OCD Website.

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**From:** Donnelly, Patti [mailto:Patti.Donnelly@wnr.com]
**Sent:** Monday, May 16, 2016 1:08 PM
**To:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Cc:** Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Hains, Allen <Allen.Hains@wnr.com>; Robinson, Kelly <Kelly.Robinson@wnr.com>
**Subject:** Proof of Public Notice for Western Refining SW, Inc. WDW-2 Class 1 Injection Well Discharge Permit Application (UICI-011)

Good afternoon! This is our submittal of proof of Public Notice for the WDW-2 Class 1 Injection Well Discharge Permit Application. The originals will be mailed to you Certified via the US Postal Service. If you have any questions or concerns, please do not hesitate to contact myself, Randy Schmaltz or Kelly Robinson.

Thank you,
Patti Donnelly

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